

SPECIAL ISSUE! GUITARS & COMPUTERS

MAY/JUNE 1997

Music & Computers

THE MAGAZINE FOR DESKTOP MUSIC

MICHAEL HEDGES

HOME STUDIO

SECRETS

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COMPUTER
CONNECTION**

**3 IN-DEPTH
REVIEWS**

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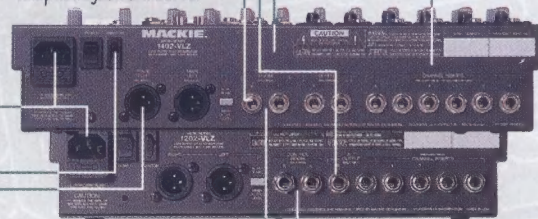
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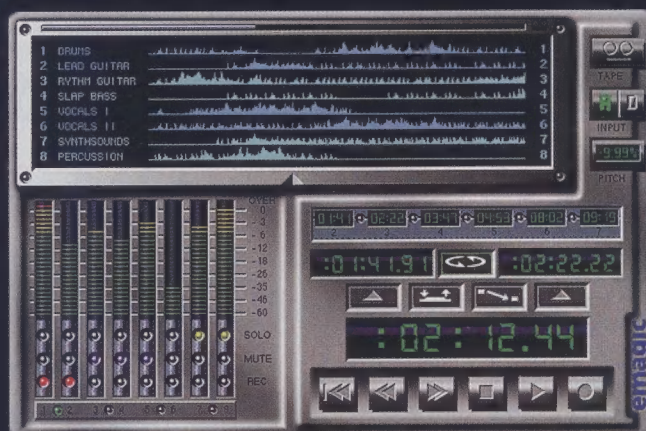
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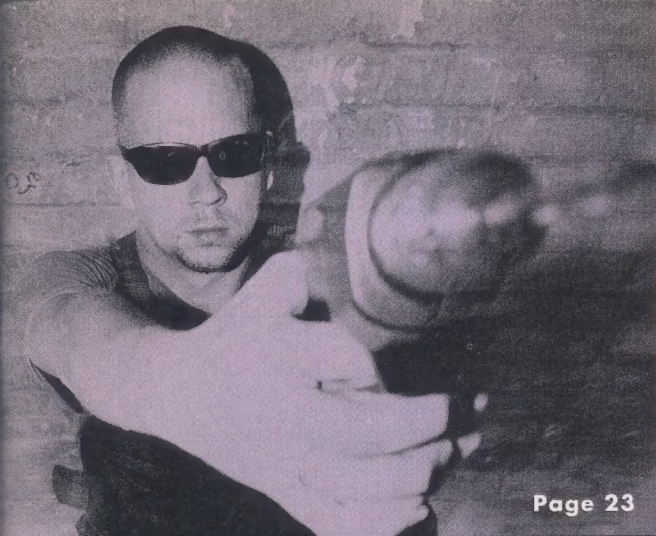
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emagic
Technology with Soul.



Page 23

FEATURES

28 INTERVIEW: MICHAEL HEDGES

Find out how this acoustic guitar virtuoso used a decade-old computer to record his last three albums at home.

33 THE GREAT GUITAR GIVEAWAY!

Win a Stratocaster, stereo amp, computer interface, and interactive guitar software — everything you need to get wired!

39 REVIEW: OPTEK SMARTLIGHT GUITAR SYSTEM (Mac, PC)

This guitar has 132 lights in the fretboard that display chords and scales under computer control. But is it a fancy show or a useful learning tool?

45 REVIEW: FENDER LYRRUS G-VOX (Mac, PC)

With the G-Vox guitar interface and software, your computer can analyze your playing and convert the notes into printed notation. We put it to the test.

51 REVIEW: PLAY GUITAR WITH ROSS BOLTON (PC)

Craig Anderton auditions a CD-ROM guitar teacher. And the verdict is. . .

TIPS

55 MIDI FILE POWER-USER TIPS

Top MIDI file developers from Tran Tracks to Tune 1000 reveal the secrets behind their commercial tunes.



Page 55

Page 28



COLUMNS

59 MYSTERIES OF MIDI by Jim Aikin

By overwhelming reader request, Jim demystifies Sys-Ex code, the key to accessing the innards of electronic music devices.

61 DOWNLOADING ZONE by John Poultney

Mac? PC? Who cares? Check out these Java-based music programs that run directly from the Internet.

63 COMPUTERS IN EDUCATION by Ken Johnson

The World Wide Web is teeming with music education resources. Here's where to find them.

67 MOD PHILES by Eric Bell

Eric reviews an 18,000-song collection of MOD files, interviews a man who recorded his own CD using only MODs, and examines DLS 1, a potential MOD killer.

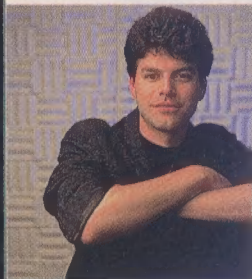
73 HOW DO I . . . by Scott Garrigus

New Column! In-depth answers to your desktop music questions, starting with, "How do I choose the right soundcard?"

80 RIDE THE WIRED SURF by the Fat Man

How many musical sausages would it take to stretch from here to Mars and back? We may have the answer soon.

From the Editor



My computer is now worth three percent of its original price. But strangely, it becomes more valuable to me every day. Even so, I was taken aback when guitarist extraordinaire Michael Hedges called recently to ask about upgrading his computer music system. It turns out he's made his last three albums with a Mac Plus, a decade-old 8MHz beast that shipped with a nine-inch, one-bit display and one meg of RAM. We discussed some options, then I invited him to call back after he'd upgraded to let us know how it went.

The next day, it hit me that the really interesting story was how he had managed to produce such high-quality music on a system that most of the world would have us believe was worthless. So we put guitarist/writer Randy Alberts on the case and uncovered some surprising techniques. (See page 28.)

The Hedges story kicks off a special section on guitars and computers in which we review three innovative products designed to help you play better. Don't play guitar yet? Flip to page 33 for a chance to win a complete setup plus interactive lessons.

This issue also marks the return of Spotlight, a semi-regular feature that showcases readers who are doing interesting and unusual things with music on computers. Like Michael Hedges, our Spotlight artist this issue is getting a lot of music out of a little computer — in his case, a 286-based PC. (If you'd like a chance to appear in Spotlight, just send us a tape, photo, and information on what you're doing.)

Speaking of squeezing fresh music from a stale computer, Dave O'Neal, who wrote our four-part series on making a CD at home (Sept/Oct '96 – Mar/Apr '97), just got his discs back from the pressing plant. In appreciation of your encouraging letters throughout the process, he's making the CD available to *M&C* readers for \$10, including postage. Contact him at P.O. Box 6984, San Jose, CA 95150-6984 or drop by his audio-packed Web site at www.mindspring.com/~tml/erratica.html.

.....

Last issue I promised to tell you about some exciting developments at *M&C*. First, although it was tough to find someone who was strong in Mac, Windows, music, and writing — as well as fun to hang out with — we finally snared John Krogh from the icy grasp of Minnesota, where he'd been working for Coda Music Software. At Coda, John was heavily involved with the Finale music notation and Vivace intelligent accompaniment products. He joins *M&C* as our new assistant editor. John plays keyboard, trombone, and guitar; he's also a songwriter and recording engineer.

Former editorial assistant and radio DJ Kyle Swenson (our cover model on the Jan/Feb '97 issue) has moved down the hall to *Keyboard*. In her place we welcome Matt Gallagher, a UCLA grad who's been storming the Southland as a proofreader and professional drummer. He recently compiled a comprehensive database of past articles, so feel free to call or e-mail and try to stump him.

We're confident that our expanded editorial team will let us tackle more ambitious projects and help you get even more music out of your computer — whatever its vintage.

—David Battino

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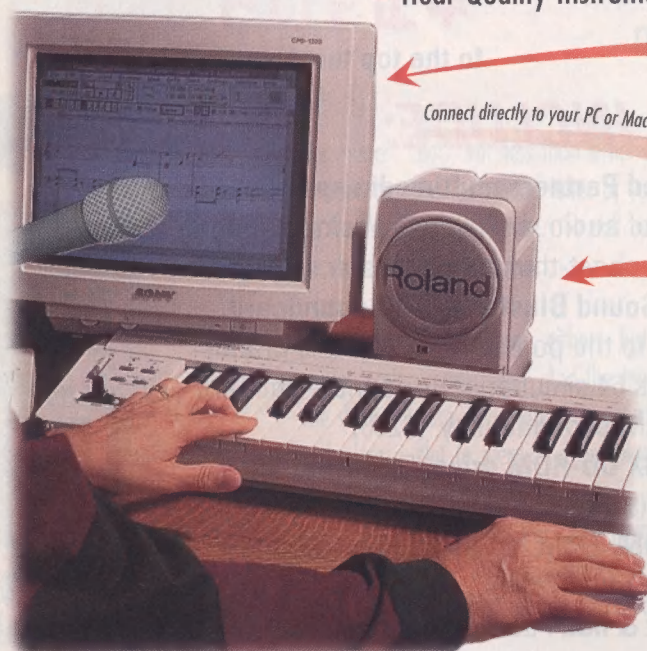
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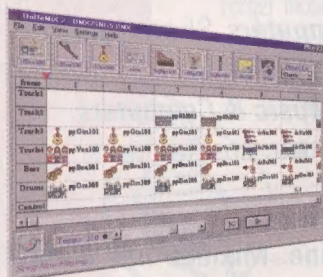


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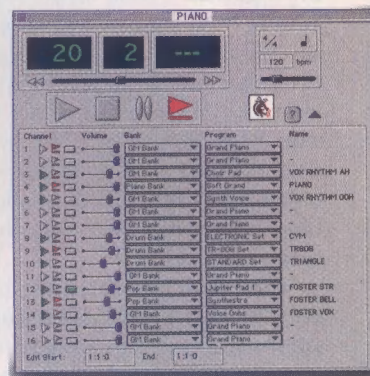
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Tales from the Encrypt

While I found the article "Realtime Internet Audio" [Jan/Feb '97] to be interesting, I can't help but wonder if the energy and creativity being directed at this isn't misguided. Maybe my mind just isn't as open as some of the "visionaries" in the article, but I don't picture my computer as my entertainment center of the future. I've discovered a perfectly wonderful system for delivering CD-quality sound in my home. It's called a "CD player."

Don't forget about the failures the industry has tried to promote over the past few years: DAT, the digital cassette, and the MiniDisc. I have no intention of upgrading both my equipment and my music collection every couple of years because the music industry can't make as many bucks as they used to. And I don't need whiz-bang toys with a lot of bells and whistles just to feel I'm getting the "state-of-the-art, best there is to offer at least until next week when we come up with something else."

The plans discussed in your article seem to me to be doomed to failure. They show not a desire to bring better service or higher quality, but simply greed. There is a big emphasis on illegal duplication, a problem that has historically been overestimated by the music industry. The solution for Internet audio? Encryption. Once you download the song, it can only be played on your computer. Great. I'll be reminded of that in 18 months when I upgrade to a new PC.

Imagine if a CD only



worked on one particular CD player. Got a car player? Buy another CD! Yeah, right.

Alan Tignanelli
North Versailles, PA
via AOL

Alan — Encrypted music will probably operate similarly to copy-protected software: When you upgrade your computer, you'll be able to de-install a song from your old hard drive and install it on your new one. (There's still the possibility of disk failure, but it's unlikely that virtual CDs will cost as much as physical ones, so the financial risk shouldn't be too high.) Some music publishers may choose not to limit the number of installs, just as most software companies have decided not to use copy protection. There will undoubtedly be enormous amounts of shareware and freeware music too.

What we find exciting about the emerging Internet audio technologies is that they stand to give a vast number of musicians and music enthusiasts a direct connection to each other. This would be a fundamental change from today's music distribution system, in which a few giant corporations determine the majority of the music you hear.

Ready . . . Set . . . Go!

I really enjoy reading your magazine. Lots of good tips for a MIDI neophyte like myself. I have a question: I like to mute the piano track on many of my MIDI songs and play my acoustic piano along with the rest of the tracks. However, many songs — "Let It Be" and "Imagine," for example — begin with nothing but a piano for several bars.

Thus, I'm usually off when the rest of the tracks kick in because I have no timing device to keep me in time. I've resorted to recording some percussion clicks on an empty track to keep me in time till the drums come in, but is there a more effective way or device that I can get to solve this problem?

Don Cleland
via Internet



Don — Most sequencer programs offer a visual metronome and location counter. (Professional film composers often cue orchestras with expensive software that generates horizontal bars called "streamers." These bars traverse the screen in tempo just before the orchestra needs to come in.) If you can't see the screen from your piano, there are several other options. One is to place a MIDI module that has a MIDI data-reception light on top of your piano and send the module a brief MIDI message on every beat. A Program Change command would work well. To make the downbeat stand out, insert a dozen more messages, spaced one clock tick apart, after the downbeat.

Ensoniq sells an inexpensive MIDI data detector shaped like a giant ant; its eyes light up when it receives data. You can make a detector yourself just by connecting an LED between the second and fourth pins (curiously labeled "4" and "5") of a MIDI jack.

Music & Disputers

I was in a music chat room and *Music & Computers* came up, and the general attitude was that the name may as well be changed to "Mac and the Computer." I agree. I have bought every issue to date, but doing four-part series that have Apple computers at the center ["From Desktop to Disc," Sept/Oct '96 - Mar/Apr '97] leaves most of us out. Strange that advertising seems to be mostly paid for by Windows-compatible software

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but the articles are Mac. Such a wonderful idea . . . so disappointing. I hope someone publishes a music/computer magazine for the general computer population some day.

Metro Wolf
via AOL

Congratulations on the "Desktop to Disc" series of articles. I have only read the first two so far, but am enjoying them immensely, especially now that I realize I can make great music (at least in theory) without waiting for that nebulous time when I have "the right gear." Keep up the great work!

David Holloway
Australia
via Internet

Im very pleased to hear that a new magazine for audio on computers exists. I'd like to subscribe, but in looking on your Web site, I never saw the word "Macintosh" in the whole text on your back issues. Do you cover it?

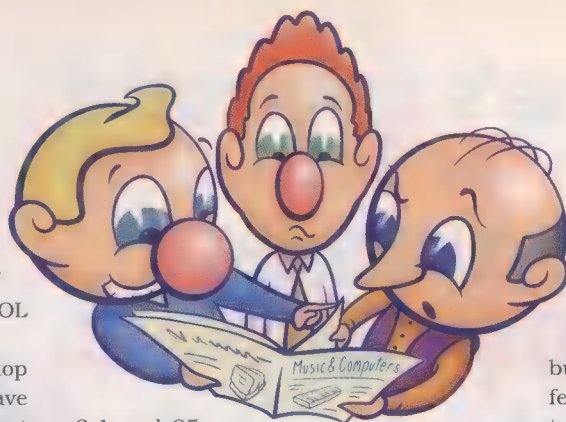
Jean F. Mathieu
Geneva, Switzerland
via CompuServe

Oh, from time to time. . . . As we've said before, our primary focus is to cover applications of desktop music technology, so no matter what computer platform is mentioned in an article, we strive to make the musical techniques we discuss useful to a wide range of readers.

Ironically, author Dave O'Neal's original plan for the Desktop to Disc series was to produce a CD using only a PC and a sound-card. It's unlikely the write-up would have been much different.

Free Synths

Ive come across three programs on the Internet that you've got to mention: Seq-303, an analog sequencer program for Windows 95; Synthic, an analog modular synth program for Windows 95 (both available at www.win-site.com/win95/sounds/asseq303.zip and [synthic.zip](http://www.synthic.zip)); and Audio Architect, a better analog synth program for Windows



3.1 and 95.

When you click on an icon, a window comes up so you can adjust the parameters in real time.

You might also want to check out the Mellosotron (a virtual sampler, the file's called [ml11.zip](#)) and another one of their products, WAVmaker ([wm9524a](#) and [b.zip](#)).

Steve
via Internet

Desperate Software Shove

I love this magazine. I have picked up each issue since it came out, and (coming from a reader of *Keyboard* for almost 15 years) I have to tell you that this is the magazine I have been waiting for. By the way, I downloaded a copy of SimSynth — I had to look around for it because the link in the Jan/Feb '97 issue didn't go anywhere — and it's great. It's one of the few shareware programs I've been considering actually buying. Another one, *The Drums Professional* [Ed. Note: Now *The Drums Wizard*; see www.midibrainz.com], is also one heck of a drum machine program — well worth a review. By the way, when are you going to get your own Web page?

I loved the idea of your mag including the disc a couple of months back. [Ed. Note: A demo of Ubi Soft's *Learn & Play guitar* CD-ROM was attached to selected copies of the Sept/Oct '96 issue.

You can also get the CD by calling 800-UBI-SOFT]. Can we expect more of that? (And I don't mean another desperate software shove

by a desperate online service.) I'd personally like to try some of the new music software. I try to stay up-to-date, but at \$500 to \$2,000-plus a program for the heavy hitters, I'd like to get an opportunity to test-drive some of the software advertised before plunking down the bucks. It would seem that *M&C* is a perfect venue for some of these companies to show off their wares in more than just a colorful ad. Anyway, keep up the great work.

Mike Madden
Jacksonville, FL
via Internet

Mike — Thanks for the kind words. Sorry you had to search for SimSynth — sometimes URLs change between the time we gather them and the time the magazine comes out. See this issue's Downloading Zone (page 61) for the new address.

Actually, we do have a Web page: www.music-and-computers.com. We haven't heavily publicized it yet because it's still rather skeletal. In the coming months, we plan to fill out the skeleton with all kinds of juicy content. Our first priority was to post the information that is requested most often — namely, how to subscribe and how to order back issues. Please let us know what other information would be valuable to you.

You can expect to see more CD-ROMs and other goodies affixed to our cover in the future. We also plan to post software demos on our Web site.

Stark Raving MOD

Im a tracker [MOD file composer] and also a member of the Kosmic Free Music Foundation (KFMF) and Carcass. When I get the chance to go to my local bookstore, I'm always sure to check out Eric Bell's "Mod Philes" columns. However, this is not a commemoration of his efforts. I believe his heart is in the right place, but his eyes and ears are not. I may be very wrong; however, I'm not sure he knows who the real tracking gods are.

If he's going to glorify people's songs, he should at least give credit where credit is due. People like Necros, Basehead, WAVE, and groups like FM and Kosmic . . . the list goes on and on. These are the true trackers and the source of the scene's

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- 480 GM- and XG-compatible AWM2 instrument voices and 11 drum voices, or kits, in Multi Play mode. Over 1000 voices are available for both Performance mode and Multi-Play mode.
- Performance mode with complete configurations of Layers (4 voices either stacked or in sophisticated keyboard and velocity splits), digital effects and other parameters. There are a total of 128 Preset Performances and 128 User Performances.
- Multi Play mode for multitimbral play of up to 16 different Parts (access 16 MIDI channels; when using an external sequencer), with 32-note polyphony.
- TO HOST terminal and HOST SELECT switch allow direct interface with IBM PC/AT or Apple Macintosh computers.
- 3 Independent DSP digital effect units which can be used simultaneously - Reverb (11 types), Chorus (11 types) and Variation (43 types).
- Arpeggiator with 30 types of arpeggiated chords and 10 timing subdivisions. The Arpeggiator's tempo can also be controlled by an external MIDI clock.
- Computer editor for Macintosh available.

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input

vitality. It's these groups and people who keep a lot of us trackers inspired. They break boundaries with their songs and keep us going. Please, sometime find room for these people's acknowledgment. Also, get *MODs Anthology*.

Inner Vision of Kosmic/Carcass/iCE
a.k.a. Gene Sumter
via Internet

Eric Bell replies: "Gene — Thanks for writing. I am aware of the trackers you speak of. They are highly talented individuals indeed. The mission of my column is to evaluate readers' MOD submissions, and to write about MOD tools and developments. The goal is to encourage the submission of original compositions, and to provide an interaction between the composer, the reader, and Music & Computers. Basically, it's a "readers' tapes" kind of idea. The key point here is that I have been writing about the MODs that individuals have submitted. They have to be original, and the composer has to be available by e-mail to comment on the tune. It is also my desire to bring MOD

music a little attention, simply because the scene deserves to be heard.

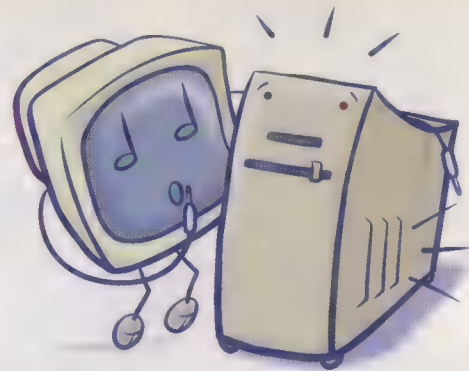
"I review *MODs Anthology* on page 71 of this issue."

The Quiet PC

I own a digital recording studio and have been looking for a quiet rack-mounted PC for some time now. Can you guys recommend any companies that specialize in computers for recording studios? I saw on the Web that your Mar/Apr '96 issue mentioned something about a quiet PC in the Cutting Edge section. What was that article talking about?

Charles Hesse
CJ Records & Digital Lake Productions
Heathrow, Florida
via Internet

Charles — The Quiet PC is manufactured by Decibel Instruments. You can contact them at qpc@decibel.com or www.decibel.com. Rack-mount versions may be available through custom order. Other low-noise



computer systems are available from Quarter Note Computers (contact qtrnote440@aol.com) and Wave Distribution (nextwave@haven.ios.com or haven.ios.com/~nextwave). These systems are preconfigured for music applications, whereas the Quiet PC seems to be targeted more at ultra-low-noise auditory lab environments. We profiled the Wave Distribution system in the Mar/Apr '97 Cutting Edge.

Correction

The Todd Rundgren photo on page 34 of the Jan/Feb '97 issue was taken by Lynn Goldsmith.

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Digital Wings for Audio delivers you from 8-track tyranny with a stunning 128 real tracks (not "virtual" tracks) of hard disk recording — with no data compression. Running on Pentium PCs (16 MB RAM/ Win95), the system includes both hardware and software; forget the installation nightmares of coaxing one company's software to work with another company's sound card.

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Dvorak, Symphony No. 9 in e minor, "From the New World", op. 95

Tchaikovsky, Symphony No. 6 in e minor, op. 64

Mozart, The Marriage of Figaro Overture

Weber, The Free-Shooter Overture

Suppe, Light Cavalry Overture

Nicolai, The Merry Wives of Windsor Overture

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Microsoft® Windows® 3.1 or Windows® 95 operating system with 486™ DX4(75MHz) or more, 16MB of memory, CD-ROM drive, mouse, keyboard, headphone or speaker, VGA display and MIDI interface + external MIDI sound source module (GM/GS/XG), or Wavetable synthesizer compatible audio board (32 voices - upper recommended)

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Cutting Edge by John Krogh & Debbie Greenberg

For more information about the products and companies featured in *Cutting Edge*, just fill out the free Reader Service Card bound next to page 65 and drop it in the mail.

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If you're looking for a variety of sounds at an affordable price and want to save desk space at the same time, **Alesis** may have the answer. The new Nano series synth modules feature 64-voice polyphony (number of simultaneously playable notes) in a box just about five inches wide. The **NanoSynth** (\$499) packs 8Mb of sounds derived from Alesis's QS6 keyboard, including a complete bank of General MIDI sounds (with 15 drum-kits). A total of 640 sound programs — including pianos, organs, vintage synths, strings, drums, and more — combined with effects algorithms from the Alesis QuadraVerb 2 multi-effects unit provide plenty of sonic possibilities.

The **NanoPiano** (\$399) offers 8Mb of sounds that include Alesis's phase-accurate stereo grand piano sample (featured in the QuadraSynth series) as well as dozens of alternate pianos, electric pianos, organs, and more for a total of 256 presets. Reverb and multi-effects are also built-in. While the **NanoBass** (\$349) may leave out the effects-processing capabilities of its siblings, it *does* give you 256 programs ranging from acoustic upright to techno bass. **Contact:** Alesis, 3630 Holdrege Ave., Los Angeles, CA 90016; 310-558-4530; fax: 310-836-9192; e-mail: alecorp@alesis.usa.com; Web: www.alesis.com. **Circle #153 on reader service card.**



If you have room to spare, the new **QSR 64 Voice Expandable Sound Module** (\$899) might be your best module bet. The QSR 64 comes with 16Mb of sounds (expandable to 32Mb), an ADAT optical digital audio output (for recording directly to Alesis's 8-track digital tape recorder or compatible computer interface cards), and a serial data port that allows you to connect the module directly to a computer for MIDI sequencing. Bundled with the QSR 64 is a CD-ROM loaded with software tools to create, edit, and store your own sounds as well as sequence and notate your music. The CD-ROM features an Alesis utility that lets you save samples, MIDI files, and program data from a computer onto PCMCIA memory cards, which can be accessed from two slots on the front of the QSR 64. The module treats the cards as additional waveform memory; it can also play back MIDI files directly from the card. **Contact:** Alesis, 3630 Holdrege Ave., Los Angeles, CA 90016; 310-558-4530; fax: 310-836-9192; e-mail: alecorp@alesis.usa.com; Web: www.alesis.com. **Circle #154 on reader service card.**



The new **Korg NS5R** (\$850) is a 64-note polyphonic, 1/2-rack-width sound module designed for sequencing and multimedia applications. The module can play 32 different sounds simultaneously and features a built-in computer interface for Mac or Windows, 12Mb of sound ROM that includes a General MIDI bank, and two audio inputs on the back of the unit. You can plug any line-level signal (such as a drum machine or keyboard) into the inputs, which are then routed to the outputs of the NS5R. This is especially useful if you're running short of input channels on your mixer, or monitoring your music through a stereo receiver. Programmable multi-effects are included.

A Wave Blaster socket lets you attach a compatible soundcard daughterboard (such as those made by Roland, Yamaha, or Creative Labs) to the module, increasing both its polyphony (to a maximum of 96 voices) and its synthesis capabilities. **Contact:** Korg USA, 316 S. Service Rd., Melville, NY 11747; 516-333-9100; fax: 516-333-9108. **Circle #155 on reader service card.**



It's hard enough to find a flexible mul-

titrack digital audio recording system without having to worry about which computer platform it runs on. With the **Audiowerk8** (\$799), the new PCI-compatible recording card from **Emagic**, your search could be over. The card features two analog audio inputs and eight outputs as well as S/PDIF stereo digital audio I/O. All jacks are RCA format.

The Audiowerk8 supports different recording configurations depending on the software you use. VMR (Virtual Multitrack Recorder), the program shipped with the card, features simultaneous playback of eight tracks while being able to record two additional tracks. You can store multiple versions of each track. Emagic's Logic Audio 3.0 software supports the use of multiple Audiowerk8 cards and provides a maximum of 24 audio tracks. Logic Audio Discovery offers 16 audio tracks, integrated MIDI and audio recording, and an assortment of DSP (digital signal processing) functions, including time-compression/expansion and pitch-shifting. Logic Audio Complete includes the Discovery features plus four more audio tracks, additional signal processing like EQ (equalization) and reverb, Audio-to-MIDI "groove templates" that allow you to alter the rhythmic "feel" of MIDI tracks to match digitally recorded loops, and more.

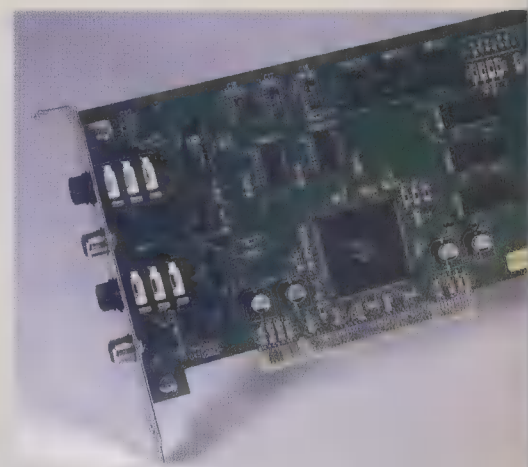


Two daughterboard expansion cards for the Audiowerk8 are planned for the third quarter of '97. The **Digital Out Expansion** card (\$TBA) will provide three additional S/PDIF stereo digital audio outputs. The **Optical I/O Expansion** card (\$TBA) will offer eight digital audio inputs and outputs from an ADAT optical connector. **Contact:** Emagic, 13348 Grass Valley Ave., Bldg. C, Ste. 100, Grass Valley, CA 95945. 916-477-1051; fax: 916-477-1052; e-mail: infoemagic@emagic.de; Web: www.emagic.de. **Circle #156 on reader service card.**



Here's another new way to get digital

audio in and out of your computer: **Lucid's PCI24** stereo digital audio I/O card (\$499) for PCI-slot-equipped Mac and Windows machines. The PCI24 transfers digital audio in AES/EBU or S/PDIF format and is compatible with most professional audio-editing applications. The card couples with external analog-to-digital and digital-to-analog converters or DAT recorders — a setup that has the advantage of isolating sensitive analog circuits from the noisy computer environment. It also performs realtime sample-rate conversion on the incoming digital audio stream, ensuring that audio goes to disk at the desired rate of 48, 44.1, or 32kHz. For those looking to upgrade older Macs, Lucid also offers a NuBus-format digital audio card, the **NB24** (\$399). **Contact:** Lucid Technology, P.O. Box 1583, Edmunds, WA 98020; 206-742-1518; fax: 206-742-0564; e-mail: lucid@lucidtechnology.com; Web: www.lucidtechnology.com. **Circle #157 on reader service card.**



Cutting Edge



As technology advances, musicians and budding multimedia artists will be able to combine MIDI, digital audio, and video without the need for expensive third-party hardware. To this end, **Steinberg** has developed **Xpose** (\$399), a software-based visual sampler. Instead of triggering audio samples, Xpose lets you use a QWERTY or MIDI keyboard to play and manipulate PICT and QuickTime images in real time at full screen resolution (640 x 480). You can record your video performances into any OMS-compatible MIDI sequencer, edit the MIDI data to create the perfect cut or fade, then save the file as a QuickTime movie, complete with audio and video.

Xpose has an open plug-in architecture that allows you to add functionality to the program or even program your own plug-ins. (Documentation for plug-in development is available for free on



Steinberg's Web site.) The Xpose package includes a variety of video effects plug-ins that can be operated with MIDI controllers such as pitch-bend and mod wheels. [See contact information below left.] **Circle #159 on reader service card.**



Merging the sound of the past with current software synthesis, **Steinberg** brings you **ReBirth RB-338** (\$495), a software synthesizer that physically models the vintage sound of a Roland TB-303 synthesizer/sequencer and TR-808 drum machine. Developed by Propellerheads Software, who were also behind Steinberg's ReCycle sample editing program, the RB-338 combines two virtual TB-303 modules with a TR-808 module into what they are calling a "complete techno studio."

Unlike other software synths that use audio samples as the basis of their sound, the RB-338 uses mathematical models to create its audio. You can manipulate the sounds in real time using on-screen knobs or a MIDI controller (such as a keyboard or drum pad), record songs (TB-303) and patterns (TR-808), and sync to other MIDI devices via MIDI clock commands. All "knob" movements can be recorded and automated. The program is OMS compatible. A direct link to Cubase VST (Steinberg's MIDI sequencer program) that will allow you to route the audio output of the RB-338 to the VST mixer is planned. **Contact:** Steinberg North America, 9312 Deering Ave., Chatsworth, CA 91311; 818-993-4091; fax: 818-701-7452; e-mail: steinberg@aol.com; Web: www.steinberg-na.com. **Circle #158 on reader service card.**

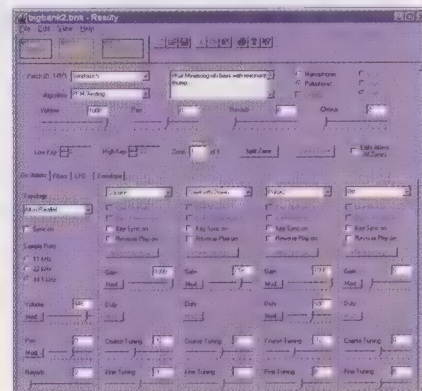


These days, keeping your computer hardware from becoming obsolete can seem like an exercise in futility.

Fortunately, **Seer Systems** has created **Reality** (\$495), a software synth that will let you expand beyond the current limits of your hardware. Seer Systems is no newcomer to software synthesis — in 1992, Intel commissioned them to develop the first commercial software synth. Reality, their third-generation software synth, supports an unlimited amount of RAM, which means that as computers become able to access more RAM, your synth can grow beyond the ceiling of current hardware limitations. The number of simultaneous notes and sounds Reality can play is limited only by your computer's RAM and processor speed.

Reality will run on any Creative Labs 16-bit soundcard. For higher fidelity, drivers included with the program allow you to route the sound to the S/PDIF digital audio output on Creative's new AWE 64 Gold card. Many different synthesis techniques are available, including physical modeling, analog, sample playback (you can use your own .WAV files), FM, and more — all of which can be used simultaneously.

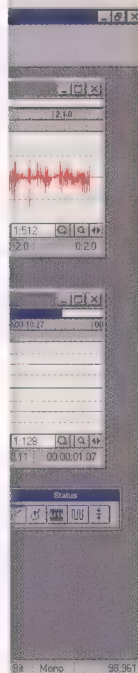
Contact: Seer Systems, P.O. Box 137, 108 Portola Rd., Portola Valley, CA 94028-7899; 415-851-7993; fax: 415-851-7994; Web: www.seersystems.com. **Circle #160 on reader service card.**



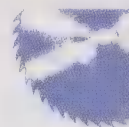
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95030; 800-800-1663 or 408-364-
2500; fax: 408-364-2507; Web: www.musicwriter.com. **Circle #163 on reader
service card.**

Cutting Edge



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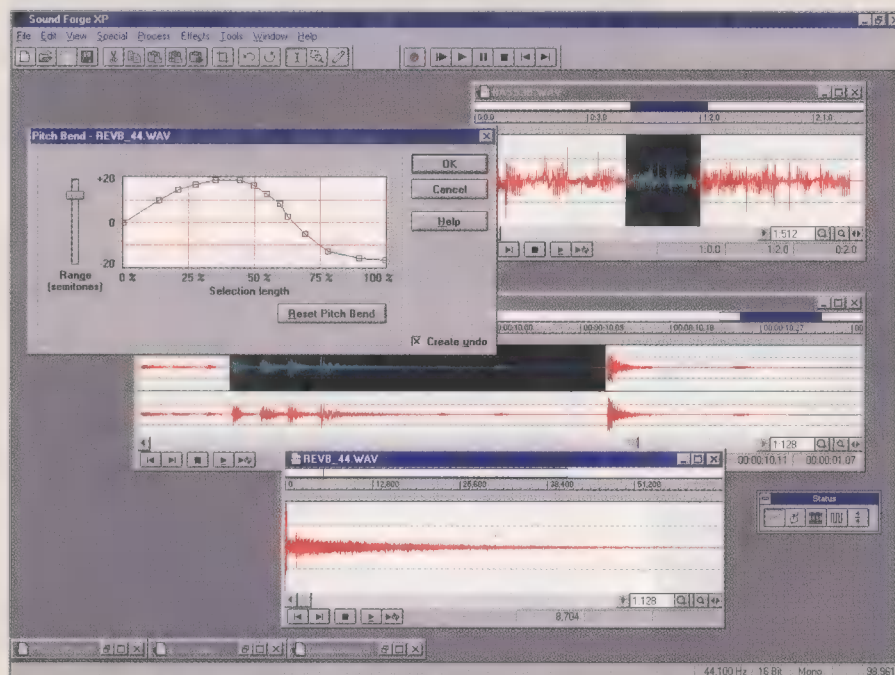
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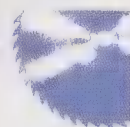
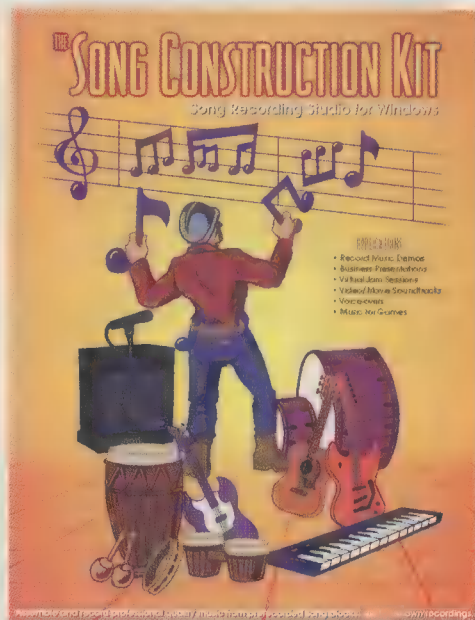
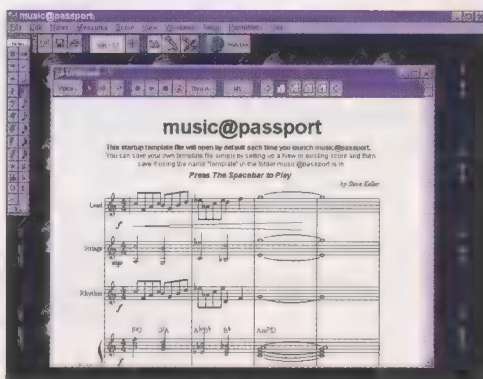
Whether you want to create polished music for multimedia presentations or just for fun, **The Sound Factory** has the right tool for the job. **The Song Construction Kit** (\$69.95) comprises two CD-ROMs that include over 500 musical phrases in each of eight styles ("Basic Beats," blues, country, funk, rock, grunge, dance, and rap). The phrases are provided as .WAV files. You can edit them using Sonic Foundry's Sound ForgeXP software (included), arrange them in any fashion, and save the completed songs as new .WAV files to your hard drive. The kit will also guide you through the song-construction process. The .WAV files are license-free, which means you won't have to worry about royalty fees or copyright infringement. **Contact:** The Sound Factory, P.O. Box 562012, Charlotte, NC 28256-2012; 704-553-7850; fax: 704-598-0627; Web: www.thesoundfactory.com. **Circle #161 on reader service card.**



PC

Getting your music heard worldwide may be easier than you think. Using **Passport Designs' music@passport** for Windows (\$129, including Microsoft Internet Explorer 3.0), you can create and distribute your musical arrangements over the Internet. Pushing a button within the program provides access to a special publishing area on the dedicated music@passport Web site and uploads your compositions for immediate posting. You can also download music files, collaborate with other musicians online, and get tips and information on the site.

The music@passport software incorporates Wildcat Canyon's pitch-recognition technology, which enables singers and instrumentalists to record music via a microphone (included) and have the recording saved as MIDI data for notation. The Show/Hide Drum Notation feature lets you print drum parts directly on the sheet music. The software also offers the standard capabilities of Passport's other notation programs, such as direct input of music via the QWERTY keyboard, and support for up to 16 staves. **Contact:** Passport Designs, 1151D Triton Dr., Foster City, CA 94404; 415-349-6224; fax: 415-349-8008; Web: www.passportdesigns.com. **Circle #162 on reader service card.**



MusicWriter's NoteStation, a computer kiosk with an electronic data-

base that contains thousands of fully licensed sheet music titles, song lyrics, and MIDI files, is accessible in music retail outlets across the U.S. and Canada. But now you can also preview and download these songs via MusicWriter's new Web site, appropriately called **NoteStation Online** (www.musicwriter.com). You can locate dealers near you, browse through their catalogs, and download samples of sheet music or MIDI files. Songs are downloaded as encrypted .pdf files, which are readable using Adobe's shareware Acrobat Reader. Payment is via Visa, Mastercard, or Cybercash. **Contact:** MusicWriter, 170 Knowles Dr., Ste. 203, Los Gatos, CA 95030; 800-800-1663 or 408-364-2500; fax: 408-364-2507; Web: www.musicwriter.com. **Circle #163 on reader service card.**

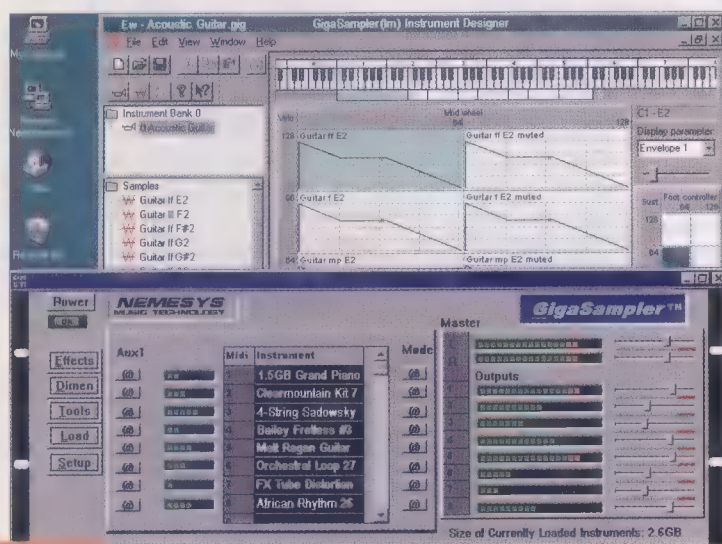
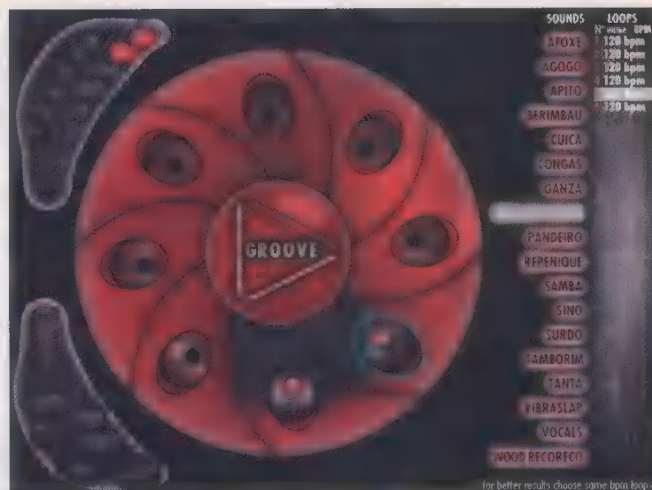
Cutting Edge



Get your fill (and then some) of Brazilian percussion with **IK Multimedia's** new interactive

sampling CD-ROM for Mac/PC. **Axe** (\$99) offers a huge collection of complete Brazilian batucada sets (including apito, berimbau, coica, tamborim, reco-reco, surdo, and many others), and will create rhythm loops based on your specifications. You can browse and play the 817 Brazilian percussion instrument loops through easy-to-use interfaces that randomly generate a ton of different groove combinations (20 million, according to IK). The CD-ROM also

includes live movies and descriptions of how the principal instruments are built and played. **Contact:** IK Multimedia, 39 59 244190; fax: 39 59 244106; e-mail: ikm@mo.nettuno.it; Web: www.venturanet.it/ikm. **Circle #164 on reader service card.**



Compromising an audio sample in order to conserve valuable memory is a sad fact of life for many of us. Wouldn't it be nice to not have to use artificial looping, filtering, and processing when sampling an instrument? The latest product from **NemeSys** just might be the answer. The **GigaSampler** (available as both a dedicated hardware sampler and as a software product to transform a multimedia PC into a sampler) is capable of handling samples as large as the size of your hard drive — it plays sounds directly from your hard disk rather than from RAM. This means that every note on an acoustic grand piano can be sampled at full length, with no looping.

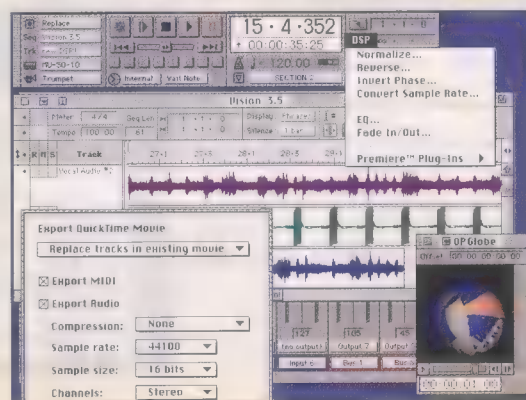
Four Windows 95-based systems are planned: GigaSampler Project (\$250) is a software-only version; GigaSampler Studio (\$795) doubles the polyphony to 64 voices and adds stereo-sample playback; GigaSampler Studio with Card (\$1,195) bundles a soundcard with the package; and the turnkey Studio Rack System (\$10,000) adds 4Gb of hard drive space, stereo sampling, a sound library, realtime effects, and plug-in effects support. **Contact:** NemeSys Music Technology, 700 Antelope Cove, Cedar Park, TX 78613; 512-260-2787; fax: 512-260-2939; e-mail: info@nemesysmusic.com. **Circle #165 on reader service card.**

Updates



With the release of Vision 3.0 nearly a year ago, **Opcode Systems** became the first company to integrate MIDI sequencing with the built-in digital audio capabilities of Power Macintosh computers. Using a Mac with audio inputs and outputs, Apple's Sound Manager software, and Vision, you could record digital audio right alongside all of your MIDI tracks without any additional hardware. The latest incarnation, **Vision 3.5** (\$395; \$99.95 upgrade), features Power Mac native code (allowing eight to 20 times faster processing), support for the Adobe Premiere plug-in effects architecture, and a slew of digital audio signal-processing enhancements.

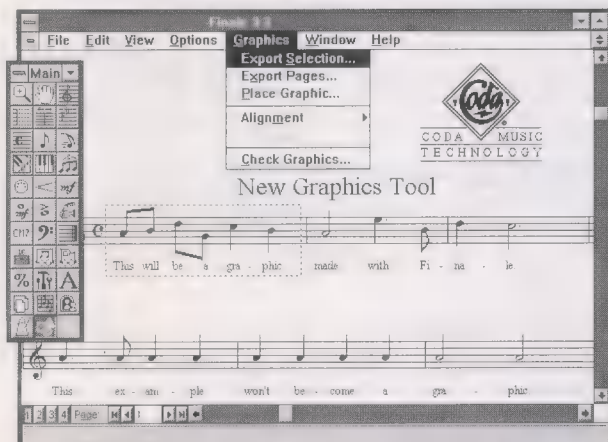
Up to 32 tracks of digital audio playback are available using Sound Manager, provided you have a 200MHz or faster Mac. Vision 3.5 can also read and write QuickTime audio files and movies. Perhaps the best news is that it now costs \$100 less than before. **Contact:** Opcode Systems, 3950 Fabian Way, Ste. 100, Palo Alto, CA 94303; 415-856-3333; fax: 415-856-3332; e-mail: info@opcode.com; Web: www.opcode.com. **Circle #166 on reader service card.**





Version 3.7 of Finale (\$545; \$79.95 upgrade), Coda's flagship notation software, includes two new tools that provide streamlined operation and additional functionality. The new Text tool incorporates the Title and Text Block tools from previous versions while adding new features that make it easier to create, edit, and place text anywhere on the page. Using the new Graphics tool, you can import and export graphics in BMP, TIFF, or EPS format for use with other graphics applications.

New features added to the HyperScribe tool let you notate MIDI input from multiple channels simultaneously and map the information to individual staves — in a sense offering multitrack notation. QWERTY keyboard jockeys can enter chords directly into the score using the Chord tool's new Type Into Score option. (Previously, if you didn't use a MIDI device

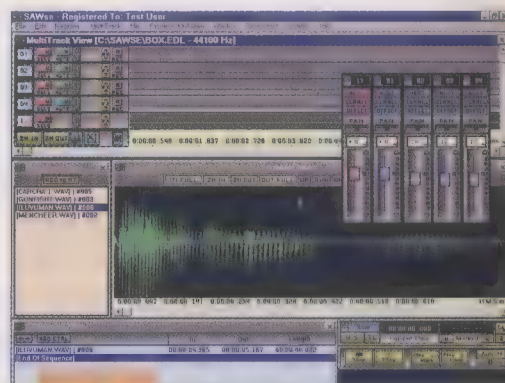
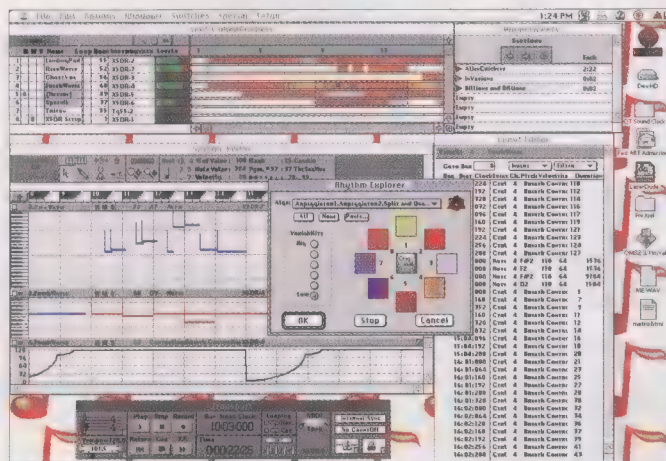


to input the chord, you had to use a dialog box to type in the chord's defining qualities.) **Contact:** Coda Music Technology, 6210 Bury Dr., Eden Prairie, MN 55346; 800-843-2066 or 612-937-9611; fax: 612-937-9760; e-mail: codamusic.com; Web: www.codamusic.com. **Circle #167 on reader service card.**



The **Metro 3.5** sequencer (\$199.95) has found a new home at **JS Technologies**. Previously distributed by OSC, which was recently acquired by Macromedia, Metro was designed to work as a stand-alone MIDI sequencer or in conjunction with OSC/Macromedia's Deck II (digital audio recording software) as an integrated MIDI and audio recording environment. Now, in addition to recording and playing back MIDI tracks, Metro features a built-in sample player that lets you play samples directly from your hard drive. The player responds to Pitch-Bend, Pan (Controller 10), and other types of MIDI data, allowing you to play the samples as you would with a dedicated external sampler. Other enhancements include a user-programmable realtime arpeggiator and the new Rhythm Explorer, which lets you experiment in real time with rhythmic and melodic patterns using built-in algorithms for arpeggiation, trills, swing quantize, and more. A new graphic editing window has been added.

Synchronization between Metro and Deck II has also been improved, allowing Metro to run in the background while working on audio files in Deck II. **Contact:** JS Technologies, 700 Warren Rd., Ste. 21-2F, Ithaca, NY 14850; 607-257-9335; fax: 607-257-6107; Web: www.smartworld.com/metro/metro.html. **Circle #168 on reader service card.**



Consolidation: Some of the best things come from it.

Take **Master Tracks Pro Audio** (\$249) from **Passport Designs**, for example, which combines the MIDI sequencing capabilities of Passport's Master Tracks Pro with the digital audio recording/editing capabilities of Innovative Quality Software's SAW (Software Audio Workshop). You can record up to 64 MIDI tracks while the audio portion of the program allows you to record, edit, and play up to four stereo or mono tracks of digital audio. The audio can be any combination of 8- and 16-bit sound files with sampling rates of up to 48kHz.

Other features include nine levels of undo, realtime DSP (digital signal processing), and automated mixing of audio tracks. **Contact:** Passport Designs, 1151-D Triton Dr., Foster City, CA 94404; 415-349-6224; fax: 415-349-8008; Web: www.passportdesigns.com. **Circle #169 on reader service card.**



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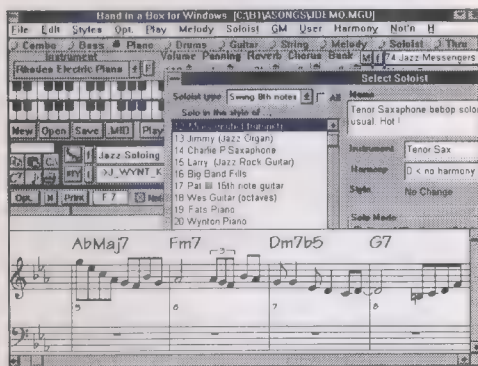
VERSION 7.0 FOR WINDOWS

INTELLIGENT SOFTWARE FOR IBM (WINDOWS/DOS) *

(* NOTE: MACINTOSH available in Ver. 6. ATARI Band-in-a-Box available only in Ver. 5)

Version 7 for Windows is here. Automatic Accompaniment has arrived!

Type in the chords to any song, using standard chord symbols like C or Fm7b5, choose the style you'd like and Band-in-a-Box does the rest... Automatically generating professional quality five instrument accompaniment of bass, drums, piano, guitar & strings in a wide variety of styles.



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Band-in-a-Box 7.0 is here! This major upgrade includes over 60 new features. We've added an amazing new feature called "Automatic Soloing". Choose the type of soloist you'd like (from 100 available) and the program creates and plays a solo in that style, along to any song! Or create your own soloists. This is hot! These solos are of the highest professional quality, rivaling solos played by great musicians! And there's lots more in 7.0 - improved notation, step time/notation edit of StyleMaker patterns, style changes at any bar, scroll ahead option for notation, improved synth support, over 60 new features in all!

OUR CUSTOMERS LOVE VERSION 7.0 FOR WINDOWS!

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"I love the notation improvements."

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Keyboard Magazine

"I am in awe. I didn't think that such an incredible program could even exist. This software is a dream come true."

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(* MACINTOSH Band-in-a-Box available in Version 6; ATARI available only in Version 5)

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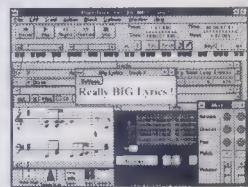
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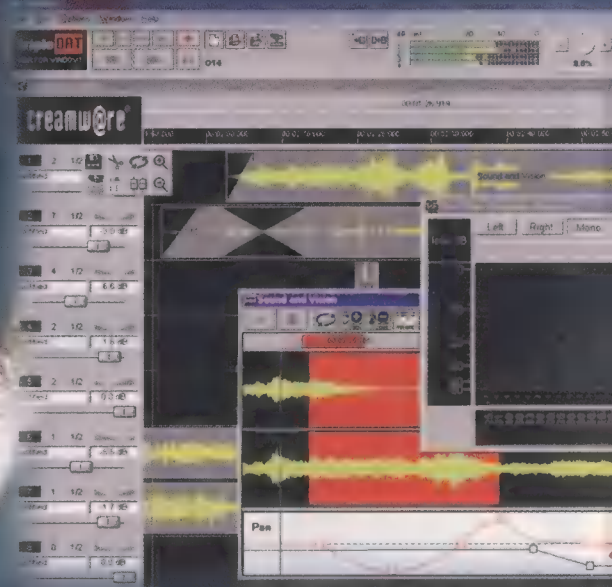
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The One-Man Machine

By John Krogh

Bodies smashed against one another, moving to the rhythm of a pounding kick drum . . . cigarettes burning small holes into loose-fitting pants as unsuspecting smokers struggle for room to move, all the while layering ash onto a beer-stained floor. . . . This is a club scene — actually, it's Ground Zero, a club in Minneapolis, Minnesota. Not the first city that comes to mind when you think of electronic dance music. However, it's home to a thriving club scene, and where you'll find Paul Robb turning out dance tracks on his indie record label, Hakatak. What's interesting about Paul's music is that it's *completely* MIDI-based — no multitrack tape recorders, no microphones, no guitars — nothing but samplers, synth modules, drum machines, and a lowly 80286-based Yamaha C1 computer at the heart of it all. (See Figure 1 on page 26.)

Now a full-time composer of electronic dance music, Paul started out as a saxophone player in junior high, but felt the allure of making electronic music even then. "I remember back in '69 or '70 my brother showed me a synthesizer in the *Whole Earth Catalog*. There was this picture of a Moog modular synth for some exorbitant amount. I cut out the picture and brought it to school to show my friends. Completely fantasizing, I went on and on about how someday I was going to play a synthesizer." Then in '86, Paul quit his job at Photomat and went on to form the synth-pop group Information Society. You might remember their biggest hit from the '80s, "What's on Your Mind," which used a vocal sample of Mr. Spock (of *Star Trek* fame) saying, "Pure energy" during the chorus. After leaving InfoSoc in '93, Paul spent the next three years composing music for film and television, including such projects as MTV's internationally syndicated versions of *The Real World* and *Road Rules*. Not entirely satisfied with music for film, he recorded *Skullbuggery* in '96 — the first CD release of his solo project, Think Tank.

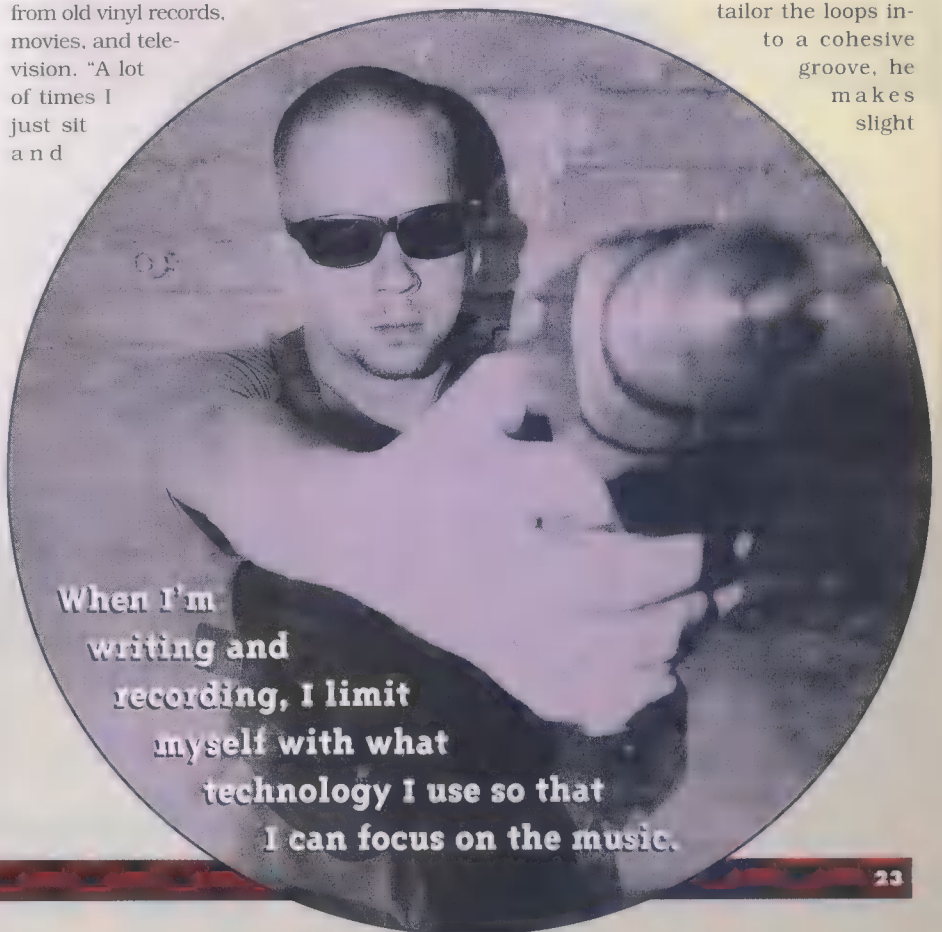
Supported by clever construction and an interesting use of mass-media vocal samples, Paul's music stands out from the ranks of electronic dance music. "The absence of lyrical content in a conventional sense is completely intentional," he explains. "It was my intention going into the Think Tank project to create pop songs, but

instead of using a singer, I wanted to use vocal samples. I've gotten a lot of heat for doing it that way because it doesn't fit nicely into either dance or pop genres. Each genre has its own limitations or restrictions. For example, in pop music there is definite structure, which includes a verse, chorus, and bridge; but in dance music, it's more about laying down grooves and making things fit into categories like trip-hop or jungle that are defined by tempo, type of kick-drum pattern, length [of the song], and sonic texture, among other things. I've tried to combine elements of both, so that when you're listening to something like *Skullbuggery*, it has definite dance appeal, but when it feels like there should be a change musically, something changes, whether it's a different loop, a bass line being introduced, or whatever. That's where pop structure plays an influential role. *Skullbuggery* is a techno-pop record in a sense."

Gathering samples for Think Tank requires a bit of creativity, a dark sense of humor, and not a small amount of time. In addition to using sample CD-ROMs, Paul spends hours sampling from old vinyl records, movies, and television. "A lot of times I just sit and

channel-surf with the VCR on, then go back later and record the audio bits into my samplers. What annoys me are CD-ROMs that contain a variety of instrument sounds — I want a CD-ROM of *just* guitars, *just* drums, or *just* vocals. I work really fast and I've never spent more than one day on a song in my life, so when I want a sound, I want to know exactly where it is. I don't have time for tweaking or programming or searching through my libraries."

After collecting and sorting through all of the "raw" and CD-ROM samples, Paul organizes them into groups of similar sounds, then stores them onto SyQuest drives connected to his three Akai samplers. While this may seem tedious, the actual songwriting process is more free. "I let serendipity take the lead," he reveals. "I almost always start off by programming the drum tracks. Occasionally, I'll use the Roland Pad-80 [MIDI drum controller] to play individual parts, but more often than not I'll trigger [sampled] loops with my MIDI keyboard and record that into the computer, then add percussion tracks later." To tailor the loops into a cohesive groove, he makes slight



adjustments to Pitch-Bend or tempo using Voyetra Sequencer Plus Gold, a DOS-based MIDI sequencer.

Unlike some producers, Paul doesn't focus on sound design during the creative process. "I treat the whole song as a sound design," he explains. "I don't spend a lot of time sculpting sounds, because the song itself is the object to be sculpted. I tend to edit velocity, Aftertouch and other MIDI controllers to make the sounds fit into the mix and make sure the performance of a sound is appropriate for the song. In that sense, it's more of an old-school way to work, because I don't actually mess with the source sounds very often. My philosophy is that if the sound is *that* wrong,

just find another sound." However, he has reportedly tweaked the occasional sound using Sonic Foundry's Sound Forge audio editing software, which is installed on his other computer, a Pentium running Windows 95.

Paul offers this insight on composing electronic music: "The challenge is, 'What possibilities are you going to ignore?' instead of, 'What would you like to do that you can't?' I think that's the beginner's curse — people can become inundated with the technology, and suddenly you're faced with this keyboard that does so much, you don't know where to begin. When I'm writing and recording, I limit myself with what technology I use so that I can focus on the

It was my intention to create pop songs, but instead of using a singer, I wanted to use vocal samples.

music instead of learning the details of every piece of gear in my studio."

On the Big Screen. Shortly before he moved back to Minnesota after spending eight years in New York, Paul received a call from some of his friends at MTV. Not expecting him to be interested, they offered him the job of scoring the European version of *The Real World*. To their surprise, Paul came on board. After gaining recognition from his work with MTV, he went on to score other shows for the Fox and Nickelodeon networks in addition to several commercial videos.

Sometime later this year Paul is scheduled to score a feature film called *Orgasmo* for director Trey Parker. He was quick to assure us that "it's a broad farce, not what it sounds like at all." The same folks who brought you *Buffy the Vampire Slayer* are producing the film; however, *Orgasmo* isn't yet slated for U.S. distribution.

When asked about the differences between film scoring and writing for Think Tank, Paul said that scoring to picture is "much more a craft than pop music, really. If you can get over your artistic pretensions and just do it, it's pretty fun. I mean, where else could I have the opportunity to write music like White Zombie or Metallica? [Laughs.] What's really nice about writing for television," he adds, "is the turn-around time. When you do a record, you probably won't get to see it released until a year later; but with TV, a week later it's on the air."

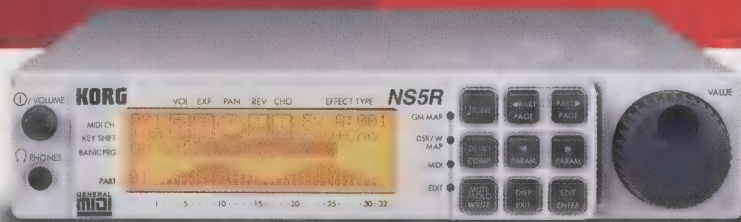
DAT and Beyond. In addition to Think Tank, Paul is currently producing two other acts signed to Hakatak: Brother Sun Sister Moon and Dissonance. BSSM's first full-length CD, *The Game*, should be available by the time you read this, as should Dissonance's as-yet untitled CD.

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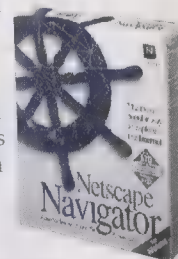
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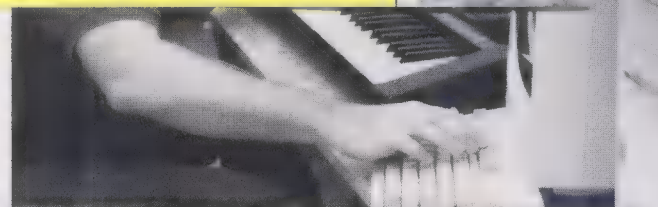
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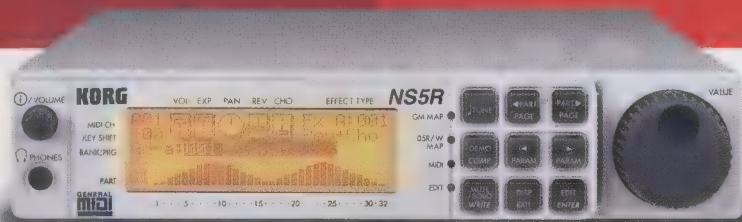
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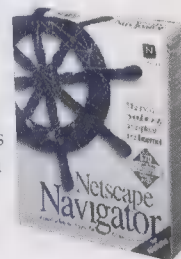
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after I did some work with a company called Digital Cafe here in Minnesota," he reports. "Originally, they wanted to buy some short cues to use in their game. I suggested that they might want to consider having some custom work rather than use canned music from a library, especially for a high-profile game. We had a meeting where we talked about Think Tank and Hakatak — it turned out that that's exactly what they wanted. We've arranged a cross-promotion where they'll display and sell Think Tank records in their facilities." Starting this year, laser tag enthusiasts can annihilate each other to the music of Think Tank.

The art of Art. With all the technology that goes into making electronic dance music, you might wonder what someone like Paul listens to when he's away from the studio. "I love acoustic music," he admits. "When I go home, I don't put on Download. I put on classical or jazz. In fact, the CD I have in at home right now is called *Sammy Davis Sings, Lorendo Almeida Plays*." While that may be true, a quick glance at the Hakatak Web site reveals someone who is very passionate about his art. In his Manifesto he writes, "Use technology to expose what is truly human."



Those who cannot control their tools risk being controlled by them." However, Paul confesses that at heart he's "a country-Zen-hippie sort of hermit, but that [way of living] gets very little attention, so I use the same tools that the power uses against me." 

Contact: Paul Robb, 612-331-5019; e-mail: paulrobb@bitstream.net; Web: www.hakatak.com. A complete list of film credits, semi-regular newsletter, and Paul's Manifesto are available on his Web site.



Fig. 1. The Wreck Room, where Paul navigates Think Tank. His trusty Yamaha C1 laptop computer, with its built-in 8-port (128-channel) MIDI interface, serves as the center of his MIDI rig. For film scoring, the computer is connected directly to a video deck's time-code output, allowing Paul to synchronize his MIDI tracks to picture. To the left is the arsenal of MIDI samplers, which are connected to 44 and 135Mb SyQuest hard drives, providing plenty of access to his ever-growing library of sounds.

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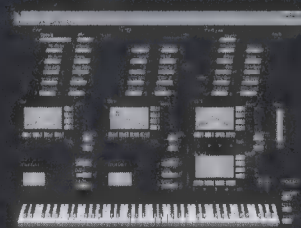
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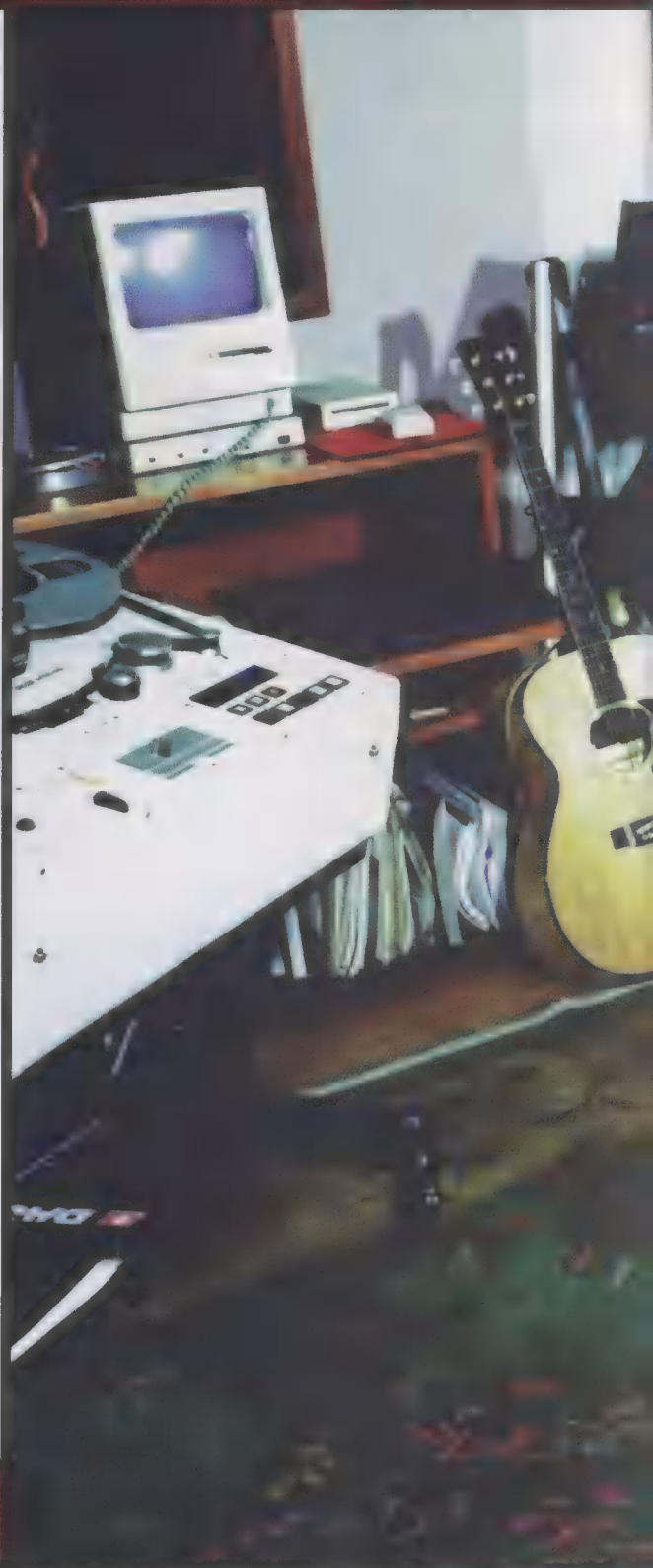
But not only were his last three albums made with the aid of a computer, it was an astonishingly primitive 8MHz Mac Plus.

Oracle, Michael's latest on Windham Hill Records, is a road returning to his *Aerial Boundaries* days, considered by many to be the definitive modern solo steel-string album. Yet his keen interest in electronica is evident in more than the tasty computer-sequenced MIDI lines and synth textures throughout. He recorded the last five of his seven critically praised albums himself. Freedom in the studio has always been Hedges' best friend, as he continues to bend the line between plugged and unplugged.

How long have you been recording your own music?

I've had my own studio in one place or another since 1985. I had just recorded two solo albums for Windham Hill, *Breakfast in the Field* and *Aerial Boundaries*, live to 2-track. I was due to make another record, and all I had were songs with lyrics. Will [Ackerman, Windham Hill co-founder] liked them and gave me a recording budget. I wanted lots of time to concentrate on the vocals, so instead of using a commercial studio, I rented this garage in East Palo Alto, California, and used the budget to buy gear. Elliot Mazer, who worked with Janis Joplin and produced Neil Young's *Harvest*, helped me set up a studio there, and we recorded *Watching My Life Go By*.

A few months later, my wife and I scraped together a down payment on some property up in Mendocino, and almost immediately I started building my current studio. There's a water tower about a hundred feet from the house that we converted into the control room. It's 25 feet tall and has what looks like a big redwood



By Randy Alberts

8 MHz Is Enough



hot tub on the top. To one side of that we added a much larger "floating" room with double walls, ceilings, and floors — a building inside a building. It's not an anechoic chamber, but it's very, very quiet. It has a wood floor and five walls, none of which are parallel. The ceiling and floor are non-parallel, too. There are no standing waves [i.e., new waves created by the interference of reflected sounds]; it has a nice, natural roomy sound. I keep a big carpet in there to keep it from sounding too much like a room and create an ambience that doesn't sound like you're in a hospital.

What recording gear did you install?

It's the same gear from the garage in Palo Alto: a 1-inch MCI 8-track [analog tape recorder], right from the period when Sony bought them, and a really nice mixer, an English 12-channel Calrec. I haven't bought a new tape recorder because I like the MCI so much. I've made five records on it. I added Dolby SR noise reduction for each channel, and though I've recorded lots of things on an Alesis ADAT [digital audio tape recorder], the MCI with Dolby blows it away. It's night and day! There's a lot of people who won't even record on digital recorders.

Why do you think that is?

I don't think it's warmth; it's presence. It has to do with tape compression [i.e., the "punchy" effect that results from slightly overdriving analog tape], but it also has to do with the combination tones. Sure, if you sample at 48kHz, you've got the audible range covered, but what about the stuff that's higher than what we hear, the ultra-high stuff you can sort of feel? Those frequencies combine, and the difference tones they create are audible. It's a presence I think you capture with analog recorders.

It's not that I'm against digital, it's that it hasn't come up to audiophile standards yet. We have absolutely no tape hiss now, but that ain't the full picture, baby! How come everybody's going back and buying analog synthesizers and tube mics to get everything to sound the way it used to?



But two tunes that I'd recorded as demos on the ADAT ended up as masters on *Oracle*. I had quickly recorded a feel down on the ADAT, and there was no way I could have recaptured that on the MCI. Not quite as good sound quality, but I was so glad not to have lost that vibe.

Do the capabilities offered by hard disk recording interest you creatively?

I'm more of a Neil Young type. For now, I'd rather do it in my head and get the feel right first, then maybe fix the glaring errors later, or just redo it. It's not like there's that much at stake.

Hard disk recording is very attractive

to me, but I don't want it to be my main system yet. The main thing for me is that nothing is standardized. It's still so much in its infancy that I want to wait a little before going that way. I'm not a purist; talk to me in about ten years and I'll probably have a digital setup. I'm just now about to get a new computer, but this little Mac Plus and [Mark of the Unicorn] Performer [MIDI sequencer] have been great. It only stalls once in a while, but that's just because of the fat screensaver!

I like using Performer. I've learned some editing procedures, and sometimes I do quantization. I'll move a few notes around, or if I play a clinker, I'll go and

We have absolutely no tape hiss now, but that ain't the full picture, baby!

punch in something. So I'm just starting to get my chops on Performer, and I'm sure that when I can do it with my eyes closed, I'll want all the latest stuff. But for my purposes in the studio, when guitar is the focus, the ten-year-old versions are still serving me so well. I'm happy with it.

That's pretty inspiring.

Well, it's so beautiful to be able to change just one note. That to me is such a big step, why not linger on that a little bit and concentrate on what you can do with it? I'm embracing technology. I just want to embrace it all the way to the heart before I move on, I guess.

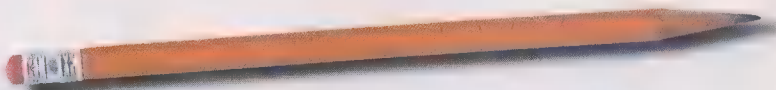
How do you use MIDI?

I write songs from the keyboard all the time. I've got SMPTE time code on one track of the MCI driving Performer on my Mac. No, I think I use Direct Time Lock [a proprietary sync signal developed by Mark of the Unicorn]. You know, it's worked so well for so long that I can't remember what type of time code I use. I take it through a MIDI [sync] box, so the time code gets transformed into MIDI and then Performer works off that.

Performer runs two Roland R-8s [drum machines]. They're my favorite machine; I use them when I need percussion or a click track. I used a click track on the song "Oracle" because I was playing so many different instruments that none of them went through the whole tune. I set a drum beat to infinite repeat just to get the song down. Then I took the R-8 home and listened to the song and wrote a drum part, continually editing until I got a part I liked. That worked really well — rather than just playing parts into Performer, I wrote the part onto the R-8 and then slaved it to Performer. If you play to a metronome, it starts to sound metronomic. I'd rather use my own sense of rhythm as the metronome.

I've gone into a sequencer track and changed notes a few ticks this way or that [i.e., forward or backward in time], and it worked out great. I did that on *Road to Return*; I was much more meticulous about that. But then when the whole record got done, it seemed like since everything was done with MIDI and click, it was a little too calculated. So I did *Oracle* with just

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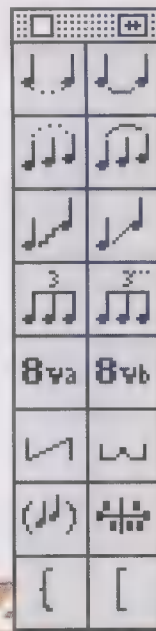
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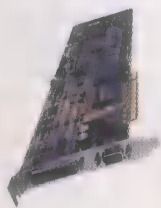
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Michael Hedges

a few tracks of MIDI, and I think it was more balanced.

The nice thing about *Oracle* is that I used like five different synthesizers. I had them all on different MIDI channels. I know that's basic stuff, but for me it was an accomplishment, because I had to learn how to assign them exclusively to one channel. I had never done that kind of work. It was all on gear that's pretty antiquated by now, but I feel like my ideas are cool with the record. I'm very happy with it artistically, but when I tell people what kind of equipment I have, they say, "Oh. That's ten years old."

But that's good for me, because I don't have to worry about the latest manual or the latest operating system. There's something about tape I still like quite a bit. I love to splice tape. There's a chant on *Oracle* where I made tape loops of my voice and slowed it down.

I was trying to figure out what that was. I thought it might be a sample.

It is a sample, but it's analog. That's the way I think of sampling, because when I learned electronic music, it was 1976. There was no MIDI. When I learned to do electronic music, it was with two tape recorders because that was what we had. And the synthesizers were all Moogs — you patched everything.

What are your favorite synthesizers these days?

I've got an Oberheim Xpander, a Sequential Circuits Max, a Kurzweil MicroPiano, a Korg X5 module, a Korg Wavestation that I use as my MIDI controller, and a little Fatar controller lying around in case I want to do a quick bass line or something. And, of course, a Yamaha DX7.

Any sampling?

You've got to have a good sampler in a studio like this, because with SMPTE I've only got seven audio tracks left. It's indispensable for saving tracks, like using a sampled wind chime instead of recording one to tape. My E-mu Emax may be antiquated by now, but it sounds good, and it's very easy to sample with.

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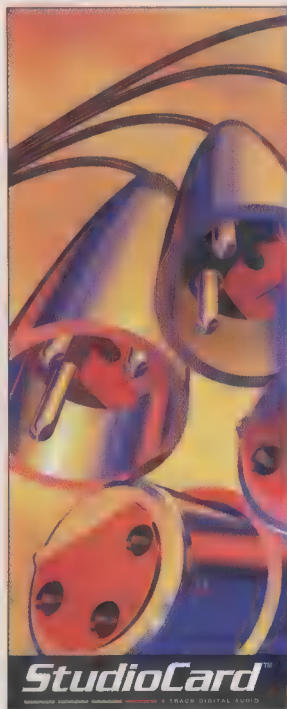
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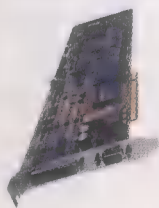


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excuse for an orchestra! Why not use it creatively, like Jon Hassell? He's my favorite electronic musician, a trumpet player who works with Brian Eno a lot. I listen to him about as much as to Joni Mitchell and Neil Young.

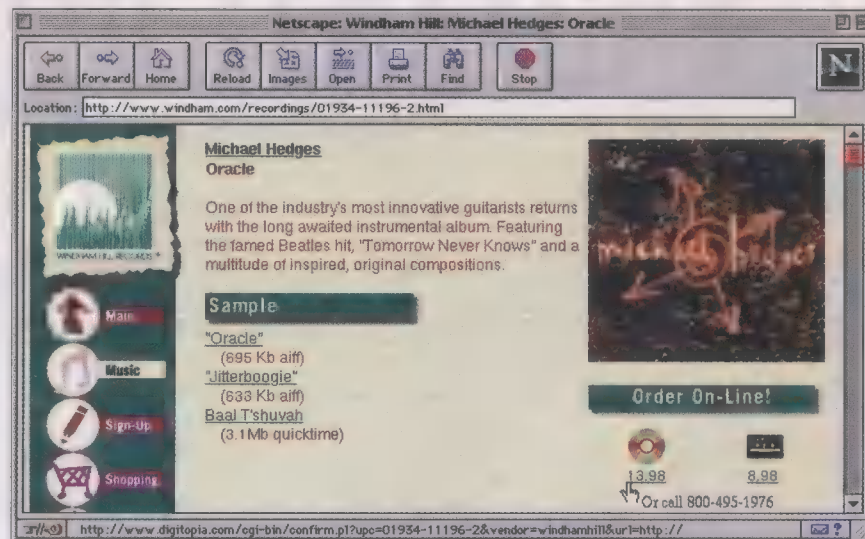
Who else do you listen to?

I like Todd Rundgren a lot. Especially his album with "A Treatise on Cosmic Fire" [Initiation], and *A Wizard, a True Star* and *Todd* [all on Rhino/Bearsville]. There's something about his instrumental electronic stuff that just nails me to the wall. He did a record live in the studio [*Nearly Human*, Warner Bros.] and I was actually there in the vocal booth with him. About the closest I've ever come to the godhead!

Rundgren is great at wearing the performer, producer, and engineer caps all at once. How does your work behind the mixing board affect your music?

It gives and it takes, but when you're experimenting around a control room, that's when you find stuff. There's a certain groove I get by doing it by myself. There's a lot of great music that's been done in a control room by the artist, because that's when you say, "Nobody's going to think I'm a loony if I try out this weird idea." I'll do things on my own that an engineer would never do. You've got so much freedom by yourself, and usually without any time restraints. I don't have to talk to anybody. I've got a feel for what the right levels are, and everything's right there. It's a one-person studio.

Sometimes it's just that feeling you get when you're entirely alone. Like I tried five times to record one tune on my latest record. It's called "Baal T'shuvah" — just a solo guitar piece. My engineer was in there and I kept trying it, and there was something about that tune that I couldn't play to him. Then I got in the studio later that night and rigged up a bunch of internal mikes and tried it. I had a little too much chorus on it and it was a little bit funky, but I ended up liking



World Wide Hedge: You can hear audio samples from Oracle at the Windham Hill Web site (above). For more information and a tour schedule, visit www.nomadland.com.

that take the best because I did it all alone.

My engineer's a really great guy. He didn't have a power trip or anything like that. He helped me so much. But there was something I could do alone that I couldn't do in front of him. I think that that works its way into ideas as well, if you're germinating things in the studio. That may happen a little more when you own your own place. I've got a big closet full of stuff and I pull out some things, thinking, "Well, maybe this will work for this tune." If it doesn't work, I pull out something else. I would tend to tire of pulling those things a little quicker if there were another being in the room, 'cause I'm afraid they're going to get bored.

When do you like to work with an engineer?

I'll bring in an engineer when I want to do a lot of acoustic recording, where I've got to be out of the control room. It helps me time-wise, and an engineer lets my ears have a rest for perspective. If I've got to spend 30 minutes just getting a guitar sound, I'm not going to be in the mood to play the tune. But even if it's somebody you

trust and feel comfortable with, it can still be difficult to record, so I like to do it both ways. They had to put up a screen for Hendrix to play behind. You're exposing your most sensitive gills out there in front of the microphone.

There's also schedules and creative cycles to consider when I want to go in there. The sun will come out, or my little boy will come in, or I'll just want to take a couple of hours off. You can't do that to an engineer. You've got to stick to your schedule, to which my manager would probably say, "Hey, that's great!" [Laughs.] It keeps things a little more creative when you don't have to adhere to one. If you've got an engineer who maybe lives right there in the same house, and he's pretty easy to get along with, and everything's on call on a beeper or something, that would be the best. Maybe I'll get lucky and make a hit record, and I'll be able to do that. For now, I'm pretty happy.

Inquiring acoustic minds want to know: How do you record and process your guitars?

I use one microphone most of the time for everything, and it just depends

Even if it's somebody you trust, it can still be difficult to record. They had to put up a screen for Hendrix to play behind.



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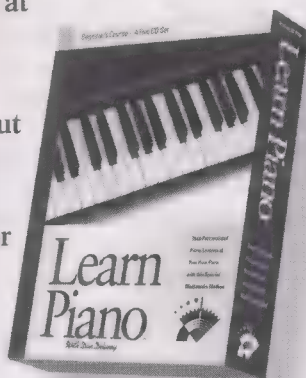
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on how anal-retentive I'm going to be about it. I could use one mic and just EQ it, but if I'm going for a special sound, like for solo guitar, I'll use four channels. Stereo mics on two channels, a magnetic pickup, and then some kind of contact mic on the guitar for presence.

I use two rebuilt Neumann KM254 tube mics for stereo. They're about the size of your big toe and six inches long. If I ever just want a big, fat, mono sound for the guitar, I'll grab this big Neumann M249B. I call it the "frog mic," because it looks like a giant bullfrog. The contact pickup is an old FRAP with three piezos in it, mounted in three different axes. It's the best sound for a contact pickup I've found. It's just stuck onto the wood. It doesn't matter to me if it's mounted on the inside or outside; it just won't get in the way on the inside of the guitar. I have lots of different preamps, mostly Millenniums, and I use the ones in my Calrec board. They're real nice, as clean as it gets.

Are you printing to tape with compression?

Sometimes, mostly the bass and vocals. For guitars I like having the transients around, though sometimes it's nice to compress the guitar. You can't hear a good compressor working, and I can't hear mine, an old Orange County compressor. When I mixed *Oracle*, we rented a tube compressor to make it a little slicker and give us a couple more dB in the mixdown process.

How religious are you about reverb?

I'm into tweaking reverb parameters a lot, but for a great, quick sound, nothing beats the Lexicon PCM60. I've got a Klark-Teknik DN780, a couple of Yamaha REV7s, and sometimes I'll just use my Alesis Microverb! Even if it's a grainy sound, sometimes that's what you want.

Any other gear you like?

My most valuable tool is a TC Electronics 1210 Spatial Expander, which I used on *Oracle* a lot. [Ed. Note: Check out the track "Theme from Hatar!" for an example of spatial expanding on an acoustic guitar.] I have a set of sound-processing modules by Scamp, an older

company that's not in business anymore. I've got a custom-built monitor system by Ed Long, the guy who designed the Time Align system for Urei. It's not spectacular sounding, but I find that when I mix on them, it sounds great on anything. I've tried lots of monitors, all of which gave me a headache at some point. Time alignment — the way sound from speakers hits your ears — is very important for long home-recording hours. [Ed. Note: Time-aligned speakers are designed to make the sounds produced by the woofer and tweeter reach your ears simultaneously, producing a more accurate image.]

How important are non-gear issues in a home studio?

In my case, extremely important. For example, for a few years after my wife and I divorced in 1988, I had a hard time getting much done in the studio. I had moved a short drive up the coast, though I kept the studio where it was. It just took a while to adjust to the new situation, so to help that process, I bought a big school bus and wheeled it right up to the door. I had this woodworking guy completely redo the inside of it and raise the roof a bit. In the middle is something that looks like a giant pizza oven, with a door that pulls down. It's a sauna; you crawl into it and it's completely dark inside. I call it "The Womb." It changes my perspective. Honestly, the bus has been about the best addition I've ever made to any studio.

Peter Gabriel once integrated his isolation tank experiences into his home studio. Have you thought of wiring up The Womb for recording?

It's similar to having a flotation tank, but for me the whole idea is to have nothing from the studio associated with the bus. No windows or lights, completely removed from what's going on just ten feet away. Ultimately, we should be able to take that perspective break without any external stimulation, but I'm not a master yogi yet!

You've got to have time to let things sit for perspective, especially when you produce and engineer your own records.

A sauna heats you up, then you cool way down, and your emotions, your human vessel, has more perspective. An engineer gives you another kind of perspective.

Do you plan out recordings?

I'm pretty lazy in that regard. I get around it by just taking more time. I'm not real good at repetition. It bores me; I'd rather be writing something new. I'll record a demo of something real quick, when I have that idea going, and then I'll do another demo of it six months later when it's fresh again. That way I can get my ideas into perspective. I don't like working on one tune for a week, because I think the music gets too sterile that way. Some guys work great that way, but they're more evolved than I am.

Any studio tips or tricks you'd like to share?

The most valuable thing is don't get too meticulous too soon. Do something really rough and then let it set awhile before you come back to it. I think perspective in a studio is the most important thing. Also, don't be shy with the EQ! Say you've got two microphones and you get a great sound out of 'em, but you spend two hours trying to get it just right. You know what I'll do sometimes? I'll turn the low end on the mixing board all the way down, and I'll run the signal from the magnetic pickup through there. I'll just barely turn down the treble, to give an effect like biamping the guitar [i.e., running the signal through two amplifiers set to produce different tones]. That's the sound I'm after! That electric bass sound, but I want the nice pristine acoustic top. And it only takes me ten minutes to dial it up. There, I've saved an hour and 50 minutes. If you can, save time in the studio by simplifying things like that.

People ask me at shows, "Wow, listen to that great sound on the guitar. What kind of mics are you using?" Mics get the top end, and that's what counts, but it's not as important in the low end. Yeah, you feel it in your gut, but you can get that cheap! Why spend \$300 on a fancy hotel when it's

When I tell people what kind of equipment I have, they say, "Oh. That's ten years old."

no different from the \$100 one except for the sauna?

Speaking of maximizing bang for the buck, the Mac Plus came out 11 years ago. Have you had yours since the beginning?

Yeah, I got it right when Apple was offering it at a low price to college students. My brother was going to college, so I gave him the money and he picked it up. [Laughs.] It's been in here ever since. I've done everything on it. I've been thinking I'll get a PowerBook because it would be fun to take some things home and then just flip out a floppy and take it to the studio. That way I could work by just taking disks back and forth.

There are some things that come to you at home that you would never think of once you get in the studio. You finish for the day and go home and you're having toast or something and you think, "Gosh, I wish I was at the studio right now." Plunging into a new computer system is a little bit scary to me, but what the heck.

I guess it's like learning any new instrument.

Well, I don't know. There's something about holding a guitar in my hand that I really like. I hate to say this to a computer magazine, but sitting in front of a screen. . . I love looking at life. I like the resolution that's in my retina. I would rather live than put on those goggles, do the virtual reality thing. Why do virtual reality when you've got reality? I want to embrace it, but I don't want it to replace anything.

I'm a little bit intimidated by people who are so well acquainted with computers, because they humble me. I'm not a great manual reader, and I would like to get a tutor. I did do that once with my electronic music instructor from Peabody [Conservatory]. I flew him out and we worked for about a week. He basically forced me the manuals. I'm not a manual kind of guy. I'll get my fingers to work real quick, but just talking to you sort of helps me verbalize stuff that I hadn't thought about. ▀

Randy Alberts (alberts@mobi.us.net) is a musician and writer based in Pacifica, California.

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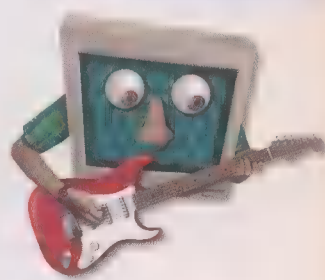
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Optek SmartLight

reVIEW



Illuminated Fretboard Learning System

(Mac, PC)

by Mark Nelson

It wasn't a particularly big ad, but it generated a big response: "Old pickup truck, high miles, runs good. Will trade for guitar." I'm the guy who placed it. Call me a romantic or a fool, I've always dreamed of finishing a song and saying, kinda folksy-like, "Yep, I love this old Martin. Traded my pickup for it."


Nothing could have prepared me for the array of forlorn and utterly worthless six-strings that paraded past my eyes over the next few days. Then the tall stranger showed up carrying a thin tweed case. "Let's get out of the sun," he said.

We walked into the cool shade of my cabin. With practiced hands, he opened the case and withdrew a glossy black Strat. It sported a few extra knobs, and an extra jack for DC power, but otherwise it oozed class. Like the bright red ostrich-hide boots the stranger wore. "Plug it in," he drawled — and suddenly the fingerboard lit up like a Christmas tree.

"Amigo, look!" he said. "Place your fingers on the lights. See, you are playing a chord! With this, you can learn to play all the chords. Wonderful, no?"

Such was my first experience with the Fretlight Guitar from Optek Music Systems, an innovative concept combining a playable axe with eyes-on-the-frets learning.

Flash to the Present. Maybe it's something in our genetic makeup, but each year we spend truckloads of money dedicated to one Grail-like goal. A quick perusal of any music magazine reveals ad after ad for CD-ROMs, videos, books, cassettes, posters, schools, camps, workshops, and

no end of doo-dads, all designed to further that selfsame end: Thou Shalt Become a Better Guitar Player. No matter what we do in our day-to-day lives, by gum we're gonna play "Layla" just like the record before we shuffle off this mortal (single) coil. 



REVIEW Optek SmartLight

With home computers becoming as common as toasters, it's only natural they, too, be yoked to the quest. Optek's entry is the SmartLight Interactive System for IBM compatibles (the Mac version should be shipping by the time you read this). The guitar still lights up, and now it's software-driven.

What It Is. My review unit came in a big box stuffed with various smaller boxes, cables, wires, a couple of floppies, a card showing how to put everything together (hmm, no manual) . . . and the SmartLight model 30-C guitar. A hybrid Telecaster featuring a figured birdseye maple top and back, it glows with a rich orange sunburst set off with gold-plated hardware. Very sweet, and very pretty. Seymour Duncan pickups, too — a Little 59 at the neck, Duckbucker at the bridge. Cool indeed. (I found out later that there is an online manual.)

Instead of the usual Tele string-through-the-body setup, the SmartLight has an Ovation-style acoustic guitar bridge. On the side, there are not one, but three jacks: standard quarter-inchers for the saddle-mounted piezo and the magnetic pickups, plus a five-pin "MIDI" connector. (An unfortunate use of the term; see the "What It Isn't" sidebar on page 43.)

Closer inspection reveals an array of LEDs (light-emitting diodes) set flush into the 21-fret rosewood fingerboard and under the clear nut. "That's differ'nt," as the regulars at the J'ville Tavern might say.

Sounds. Strummed unplugged, the SmartLight displays a surprising amount of sustain — a very good sign. The neck is comfortable and quite playable, a solid improvement from the original Fretlight.

The idea here is to plug the bridge and magnetic pickups into separate amps, letting you switch from a folkie to a guitar god at will. Can you? Well, actually, you can. I'll admit it, I was surprised. Dial up some creative EQ and effects, and the SmartLight sounds just about as good as any other plugged-in acoustic. I'm not saying you're gonna fool a diehard bluegrass, but it'll do on a dim stage.

Engage the magnetic pickups and it's an aggressive little puppy, with bark and bite. Each Duncan exhibits its own quirky character — everything from spank to spunk, as the tone mavens over at M&C's sister magazine *Guitar Player* might say. Though voiced more towards the country/rockabilly end of the spectrum (it does look like a Telecaster, after all), the addition of the saddle pickup gives you a fair amount of color to choose from.

And those LEDs in the neck? After a couple of minutes, I forgot they were there.


I've taken so much space discussing the guitar here because it is crucial to the entire SmartLight philosophy — remember, you must buy one of their axes to take advantage of their interactive system. It is a nice guitar, though maybe not as versatile as some might like. A quick poll of bar bands on any Saturday night will show Strats and Les Paul-style electrics to be the people's favorite, whereas the SmartLight has a decidedly Tele-like sound. On the other hand, perhaps Optek chose the Tele style for the very reason that it would be a tasty second or third guitar. The SmartLight is made in Korea by Samick, by the way.

Lights . . . Camera . . . Action! The essence of the system is the ability to show fingering positions right on the neck of the guitar. To accomplish this, you hook the SmartLight to the interface box, dubbed (what else?) the SmartPort. According to Optek's ads, you'll learn faster by focusing on the guitar, instead of by looking back and forth from a computer screen or printed page. (Whether or not this is an improvement over traditional learning methods is discussed in the "See the Light" sidebar on page 42.)

Connection is straightforward: Optek supplies all the cables you need, including a fairly rugged footswitch. There's even a DB-25 to DB-9 adapter to cover most common computer configurations. Thoughtful. Unlike the huge "wall-wart" power supply. . . .

You'll know you've got the guitar wired up because suddenly the neck starts to sprout bright red LEDs that flash in a variety of patterns. Very big on the coolness factor.

S.O.S., It's the G-Man. My system was shipped with the G-Man v. 1.03 software; the day after it arrived, a beta version of the new S.O.S. v. 2.0 (formerly called G-Man Pro) appeared on Optek's Web site. Though I dislike the far-too-common practice of posting unproven software, in the very near future S.O.S. will replace G-Man, so I tested both versions.

Here's where a printed manual would have come in handy. At first I was unable to achieve control of the guitar with the S.O.S. software, and the download neglected to include several important help files. A quick glance at the online manual revealed an improperly set modem to be the source of the conflict, but the problem could have been avoided. Fortunately, when I popped in the G-Man disc, it loaded first time out. 

DESCRIPTION

Solid-body acoustic/electric guitar with computer interface. Software illuminates LEDs embedded in fingerboard to show finger positions for chords, scales, etc.

HARDWARE & SOFTWARE REQUIREMENTS

Any PC running Windows 3.1, 95, or NT, or a Macintosh Classic II or higher running System 7. SmartPort PC Connection Kit required for computer use; Fretlight Plus Connection Kit required to drive SmartLight without a computer.

FEATURES

Quality guitar with custom pickup options available. LEDs in fingerboard keep eyes focused on the guitar for practicing. Software supports most basic chords and scale types, as well as tablature input. Flexible software design allows customizing of lessons and drills.

SUGGESTED RETAIL PRICE

As reviewed: Model 30-C guitar (\$479.95) with SmartPort PC Connection Kit and S.O.S. software (\$199.95), total \$679.90.

Other guitar models: 30-A \$239.95 (solid body, piezo pickup), 30-B \$304.95 (solid body, piezo and two single-coil pickups, also available left-handed). Custom pickup options available.

Accessories: Fretlight Plus Connection Kit \$249.95, SmartBlender A/B switching box (switches between magnetic and piezo pickup outputs) \$74.98, SmartHub Group Interface \$89.98 (allows teachers to drive up to nine SmartLights simultaneously).

CONTACT

Optek Music Systems, P.O. Box 90485, Raleigh, NC 27675; 800-833-8306 or 919-878-7997; fax: 919-954-8389; e-mail: info@optekmusic.com; Web: www.optekmusic.com.

PROS

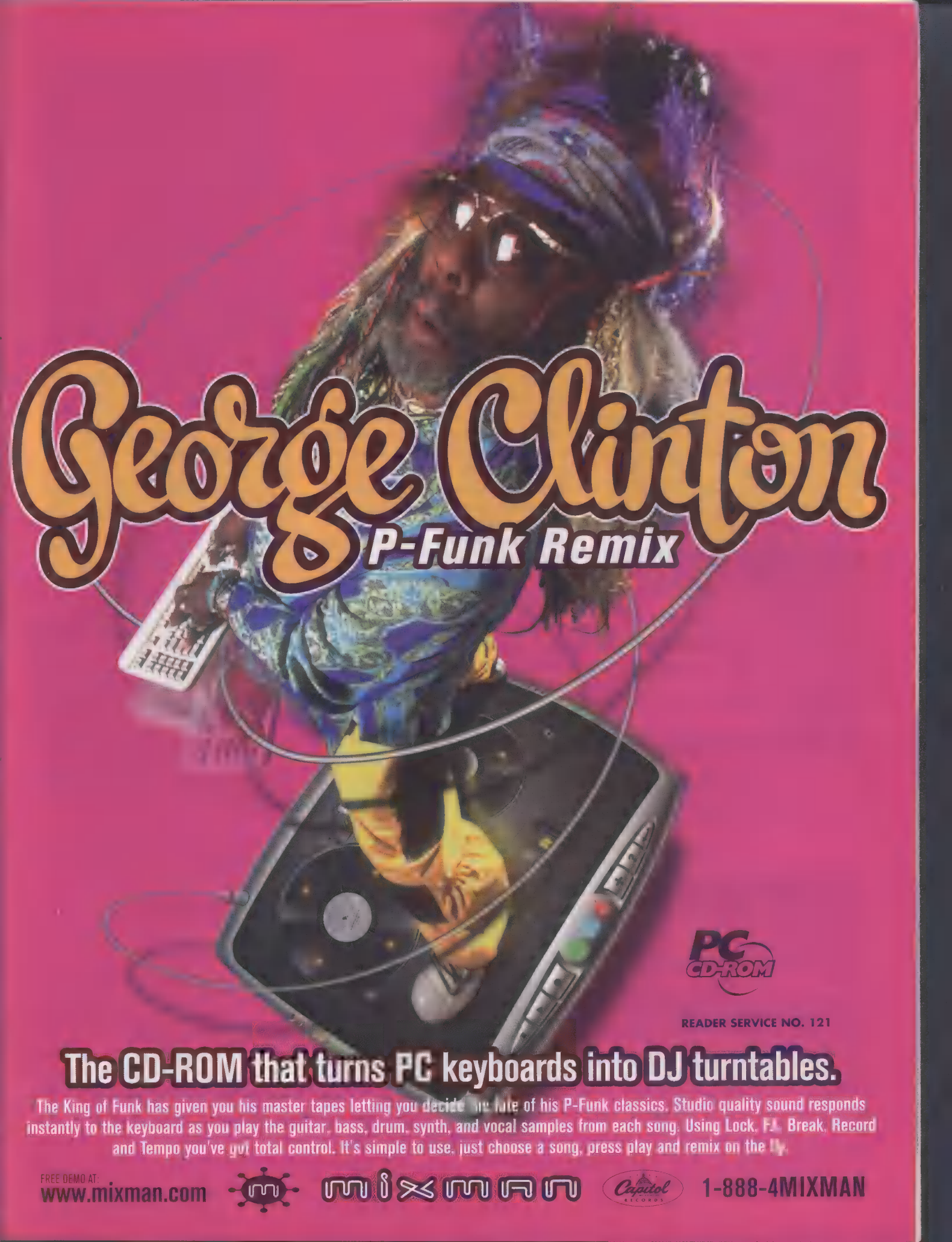
Extremely flexible software. Nice, versatile guitar. Lots of room to grow. Many users found having finger positions illuminated on the fretboard to be helpful.

CONS

Can't use your own guitar. No built-in library of lessons. Doesn't help with reading music.

BOTTOM LINE

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A vibrant, surreal image of George Clinton, the leader of Parliament-Funk-U-M.C., standing on a large, vintage-style turntable. He is wearing his signature colorful, patterned clothing and a turban. His right foot is on the turntable's platter, which has a CD on it. His left hand is on a computer keyboard, which is connected to the turntable by a cable. The background is a solid, bright pink. The title "George Clinton" is written in a large, stylized, orange-outlined font across the middle, with "P-Funk Remix" in a smaller, black font below it.

George Clinton

P-Funk Remix



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Incidentally, both versions of the software occasionally locked up on me. The only recourse was to quit and re-launch the program.

Light Fingers. The software's basic idea is simple: Choose from a menu of chords, scales, or notes, pick a key, and the corresponding frets on the neck light up. Put your fingers on the dots. Bingo — instant practice. That, in a nutshell, is that. (See Figure 1.)

The menus are fairly limited. First up you get Easy Chords: basic root position chords in major and minor forms. (Think of those chord boxes printed on sheet music and you'll get the idea.) You can also choose notes and find them pinpointed on the neck. Other choices include chords in the basic major, minor, and 7th flavors, scales, and what Optek calls "diagonal" scales, which show fingerings that move up the neck.

Unlike the older Fretlight, which had a fairly complete harmonic vocabulary, the current software only supports major,

minor, major pentatonic, minor pentatonic, and blues scales — a limited palette. All scales and chords except Easy Chords can be further defined by an arbitrary numbering system, with higher-numbered positions falling farther up the neck. (Optek says the final release of S.O.S. 2.0 will include all the Fretlight chords and scales as well as the ability to store user-created chords and scales.)

A Song by Any Other Name. Where it gets interesting is at the next level, where you chain different scales or chords together in musical time. Say, for example, you want to practice playing dominant 7th forms up and down the neck. You can enter chords as steps in a sequence, and the program plays your data at a user-defined tempo. (See Figure 2.) I tried it, and watched mesmerized as the dots flowed up and down the neck. But without an audible metronome, I found it difficult to synchronize my fingers to the display. Fortunately, the footswitch let me step through the changes at a nice geriatric pace. (Optek says the final release of the S.O.S. 2.0 software will include a metronome. They also promise that software updates will be free.)

S.O.S. has more tricks up its sleeve, including the ability to define your own scales or patterns by clicking on a picture of the fretboard. (See Figure 3.) This allows you to enter tablature from any printed source. Be forewarned, however; it can be a tedious process indeed.

Suppose you wanted to practice a four-bar Memphis soul riff printed in a magazine. Here's what you'd do: Open the New Chord/Scale window, click on the appropriate fret numbers displayed for beat one, enter that as a step in your sequence, return to the fretboard window

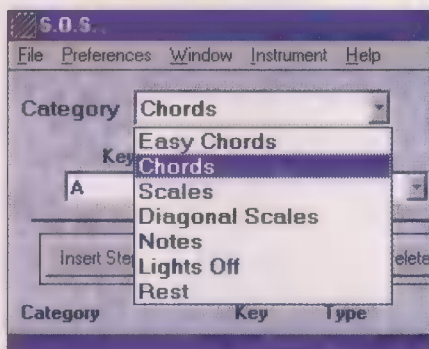


Fig. 1. To light up the SmartLight guitar, you select a musical category and key from the accompanying software; the computer then fires the corresponding LEDs on the fretboard. You can also string together chords in a sequence and step through them, as shown in Figure 2.

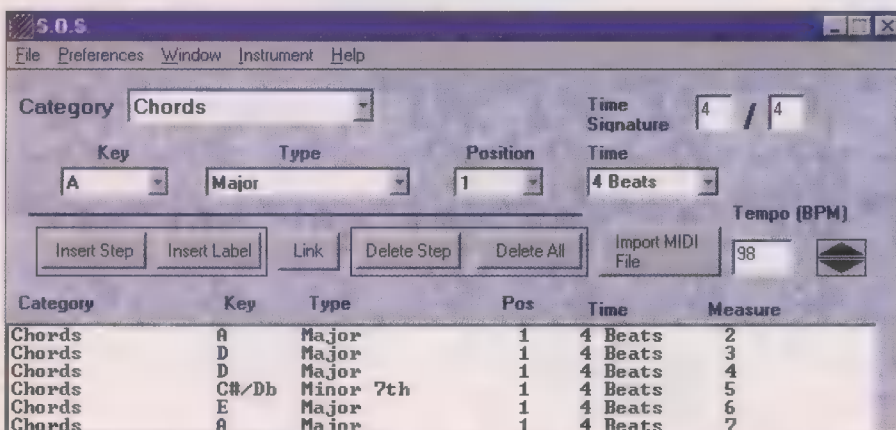


Fig. 2. The sequence window shows the data that will be sent to the guitar. You can set the computer to step through the changes at a predefined tempo or advance line-by-line as you tap a footswitch.

See the Light

"I imagine how hard it would be to type if your computer had no letters on the keys," observes Rusty Shaffer, Optek's president. The fundamental idea behind the SmartLight System is that it's better to focus your eyes on the neck of the guitar than to look back and forth between the guitar and a book or computer screen. Is it?

While it's true that most guitar players rely on visual cues, this is not necessarily the ideal. Practicing while focusing on a page develops the eye-hand-ear coordination necessary for sight-reading. At the very least, most players tend to see the neck with one corner of their eye, meanwhile focusing somewhere else entirely — like on their tennies or the A&R weasel at the bar. Many jazz and classical teachers actively discourage students from looking at the neck, although others find it an effective way to learn.

Every guitarist (and one non-guitarist) who tried the SmartLight had difficulty seeing the LEDs from a normal playing position. They all angled the instrument slightly flatter than normal, while bending unnaturally forward from the head and neck. While I imagine this had something to do with the novelty of seeing the fretboard glowing and would pass with time, it can place a strain on your muscles and tendons. I'd recommend taking regular breaks, including stretches and relaxation exercises — which is a good idea no matter how you practice guitar.

[Ed. Note: We asked Optek to comment on Mark's findings. They replied, "We have not heard from any of the over 10,000 Fretlight and SmartLight owners that they experienced any sort of strain or muscle cramping from looking at the lights. The reality is that guitar players look at their fingerboard, whether it has lights or not."]

and enter the fingerings for beat two, enter that as step two, return to the New Chord/Scale window . . . and so on and on. Get the picture?

Like everything involving a computer, the beautiful part is that you only have to enter it once. From then on, it's there whenever you need it. So you can create a library of personalized lessons and drills, or create your own "songbook," or anything else you dream up. This flexibility is the heart of Optek's approach.

Finally, you can import individual tracks from Type 1 (multitrack) Standard MIDI Files. The software then maps the notes to the fretboard and lights up the guitar, though not always in the way you might expect. Still, it's a fast way to input notes, and you can edit the fingerings

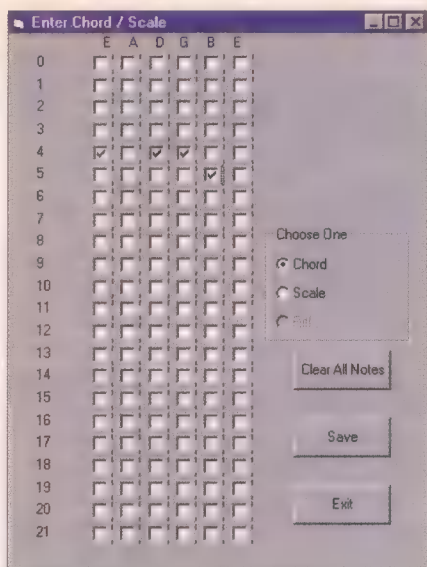


Fig. 3. By clicking in the fretboard boxes, you can enter chords from tablature or create your own. Here we've moused in a tasty $A_b m 7 \# 5$ chord.

later. Optek is talking with sequencer and instructional software companies about further applications of a MIDI-to-LED link. As part of an integrated songbook or lesson plan, this feature would make some pretty innovative third-party software possible.

Apply Yourself. Unlike other guitar instructional software, S.O.S. doesn't offer lessons, or even much in the way of guidance. An online manual provides some very sketchy suggestions for use, but it's up to your creativity and motivation to get the most out of it.

That's both a beauty and a curse. Being software-driven, the SmartLight is open to all kinds of possibilities, but you'd better know something about playing the guitar already in order to derive much benefit. As an adjunct to a traditional course of study, it will shine — but by itself, it will not teach you how to play guitar.

More advanced guitarists may find this flexibility liberating. I thought up literally dozens of interesting things to try — I could enter and save my own arpeggio drills, or link chords with related scales, or create individualized lessons for my students, or input the melody for "Ornithology" and finally get it right. Of course, there's nothing to stop me from doing that now on my own guitar.

For another point of view, I let a pair of rank beginners try it out: One found the lack of programmed instruction so frustrating that he gave up in disgust; the other thought it was just the ticket and happily

What It Isn't

Despite the term "interactive" in the name, don't expect the computer to know what you play on the SmartLight. Although the connection between the guitar and the SmartPort interface is a MIDI cable, what gets transmitted is proprietary code telling the microprocessor in the guitar how to behave. You communicate with the computer the old-fashioned way, using a mouse.

It's not surprising that everyone who saw the guitar thought it worked with some kind of bidirectional communication; that would be a hugely effective way to teach. Although Optek disparages their competitor's "suction-cup MIDI pickup," use of words like "sequence," "song," and "MIDI cable" can cause some confusion about how the SmartLight works.

It's too bad, because a real MIDI interface would make this product a must-have. Imagine if it not only showed you where to place your fingers on the neck but also evaluated how well you played!

In the interest of science and full disclosure, I did connect the MIDI cable from the guitar to a keyboard. Nothing happened. I know, it was a stupid thing to do. But it's my job.

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REVIEW Optek SmartLight

stepped through chord after chord. "If I could afford it, I'd buy one of these tomorrow!" he enthused. The retail price of the 30-C at that point was \$999.95. A few days later, Optek cut prices in half, making it a tremendous value.

One nifty thing I discovered: By using the New Chord/Scale feature, it's possible to light up the neck to say, "Hi, Mom." Thought you'd like to know.

Promises, Promises. Ever notice that everything written about computers says essentially the same thing? "Just wait! It's gonna be really neat really soon." I hate that.

Guess what? The SmartLight Interactive System is gonna be really neat really soon. Here's why: According to Optek, before long you'll be seeing third-party software modules — things like MIDI files of popular songs that will light up the melody, chords, and solos as they play. Or maybe a guided series of lessons building from the simplest chords to full songs. Imagine hearing a classic blues solo while it's traced across your fretboard. How about a jazz workout where the fretboard shows you the scales for soloing over the changes?


No, these lessons are not available now, but the software is so flexible you could create them yourself. Once again, if you already play some guitar, it's easy to dream up applications that may inspire you to practice more effectively.

Conclusions. Initially I was quite skeptical about the whole idea; after all, why would anyone need a special guitar just to learn scales? Like everyone I know, I have a whole bookshelf of scale studies, chord diagrams, and back issues of guitar magazines going back to the stone age. But maybe that's the point; like every other player, I'm always

searching for a better way to master this crazy instrument.

Though I'm still not 100% sold on the concept of staring at your guitar, I do believe that Optek is onto something. The SmartLight system could be a very effective tool for the right person. I liked the guitar when it listed for \$999; at \$479, it's a terrific value. You must be willing to invest some time and energy creating your own drills and lessons, though, 'cause there ain't much spelled out for you now.

Best to see the SmartLight as one tool in your educational arsenal. Since it's software-driven, you can likely make the guitar do anything you want. With enough effort, you could even have it beam out "You Light Up My Life."

Oh, and my pickup truck? The stranger didn't want it. 

Trick of the Light

If only there was a way to get the SmartLight to do all these tricks onstage. Picture this: A roadie hands you a scrap of paper, you fiddle for a few seconds, and with a triumphant roar, raise your axe above your head, flashing a message to the adoring throng: "Will the owner of the blue Pontiac, license number. . . ."

When not playing air guitar, Mark Nelson records, writes, and walks his dogs in southern Oregon (not enough, according to the dogs). He thanks Oregon Sound Recording and Jack and Laura Reavis for their assistance with this review.

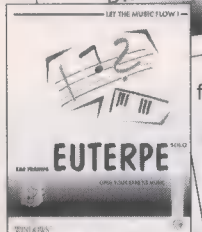
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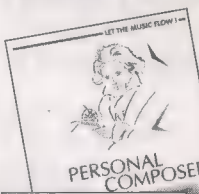
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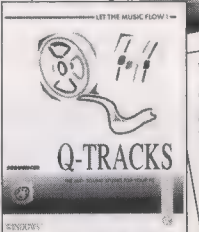
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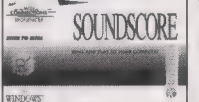
Personal Composer (HM10206)
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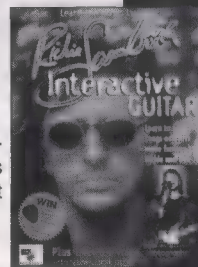
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by Tom Benford

When I first started learning guitar over 30 years ago, my regimen consisted of a weekly lesson plus daily practice doing exercises from books like the Mel Bay series. The lessons flew by, but my solitary practice sessions were monotonous and boring, to say the least. Back in those days, there were no personal computers (or even VCRs!), so there was no "interactive" learning option — no personal instruction available electronically whenever I wanted it. Thankfully, that's not the case today.

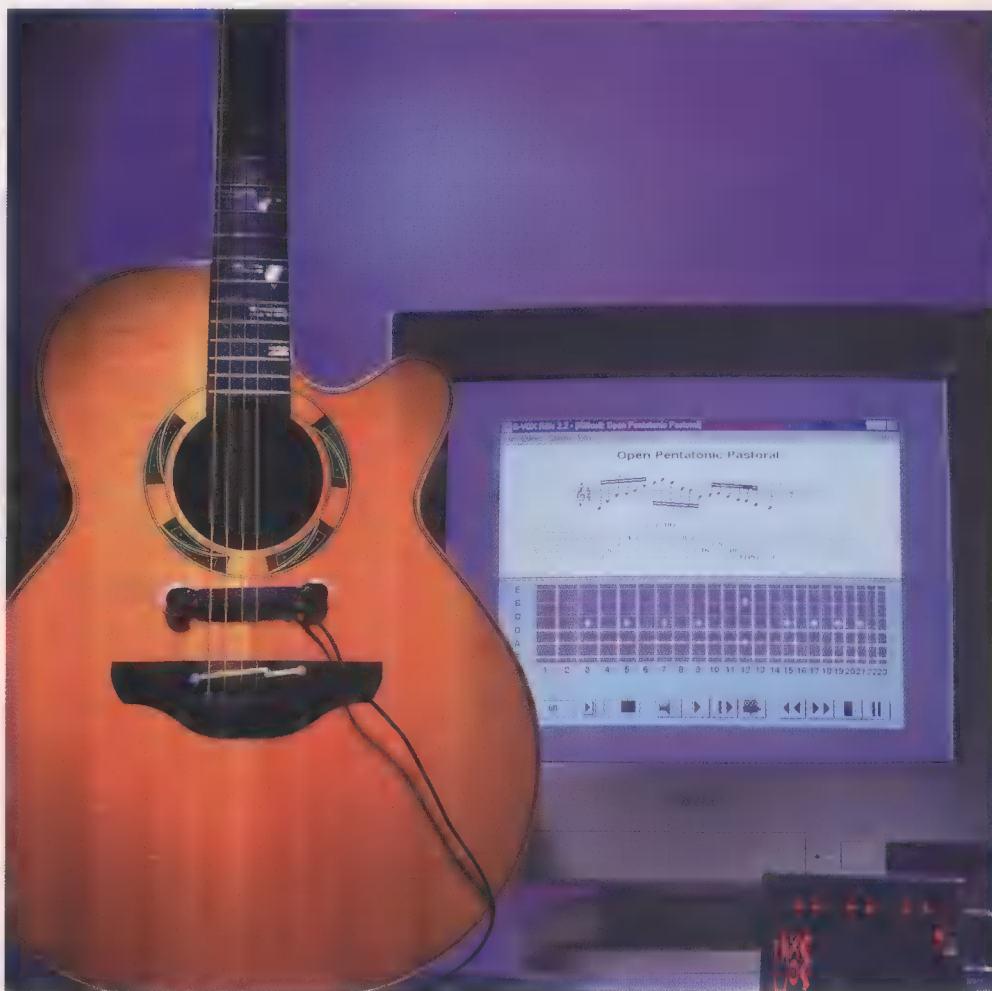
Lyrrus has developed an ingenious and effective means of interfacing guitars to computers to produce an interactive instructional environment that's anything but boring. They call it the G-Vox system and tout it as "the guitar technology that helps you play better, faster." I found this to be true — it really is a terrific educational tool.

Out with the Old. Digital guitar interfaces have been around for quite a while. They usually consist of a pickup that mounts under the guitar strings, senses their vibrations, and converts the signal into MIDI data that can control a synthesizer and/or be transmitted to a computer. Once in the computer, the MIDI data can be stored and edited, and then played

back through a synthesizer. To use your guitar with a computer, you need the guitar-to-MIDI interface, a MIDI-to-computer interface, a variety of cables, and a software application such as a MIDI sequencer to store and play back the data. You'll also need a soundcard or a

MIDI synthesizer to convert the MIDI data into audio signals.

Quite a shopping list, to say the least. Setups like these have their place for the professional musician who uses MIDI extensively for recording or performing, but they certainly aren't ideal for the novice or



REVIEW Lyrrus G-Vox

anyone who wants to learn the guitar.

In with the New. The G-Vox system takes a different approach. It packs everything you need in one box and makes it easy to use, even for the non-technical guitarist. The package consists of a hex pickup with various mounting hardware, a belt pack, an AC adapter, cables, a screwdriver, software, and a well-written user's manual. The hex pickup mounts under the guitar strings near the bridge with silicone suction cups or, if you prefer, winged brackets that attach using your guitar's pickup-mounting screws. The suction-cup method works particularly well for mounting the pickup on acoustic guitars, although Lyrrus cautions against using the suction cups on guitars

with nitrocellulose finishes since the silicone may mar the finish.

To evaluate the system, I used a 133MHz Pentium-based IBM Aptiva with Windows 95 and 16Mb of RAM, connecting the G-Vox hardware to the PC's COM2 serial port. For audio output, I used the PC's internal Mwave wavetable soundcard. My guitar was a Shadow G-234 Stratocaster-style solid-body with a 24-fret neck and a Floyd Rose-licensed tremolo unit. I had used this guitar to record most of the MIDI tracks on my *Some Things I've Done* album, so I'm both familiar and comfortable with it — important for achieving good results.

While the G-Vox system will work with virtually any acoustic or electric guitar, it should be noted that steel strings are required for the G-Vox pickup to do its thing; nylon strings don't produce the necessary magnetic resonance. The back of the G-Vox package shows an illustration of an acoustic guitar fitted with the G-Vox pickup with a caption that says, "The G-Vox pickup 'hears' every note, chord, riff, bend, and slide you play." If it did in fact hear the notes, then nylon strings would be okay. But, alas, this is not the case.

Once the G-Vox hex pickup is attached to the guitar, you plug its cable into the belt pack (this is an odd moniker, since there's no clip or slot on the unit to attach it to your belt). Another cable connects the

belt pack to an available serial port on the PC. Plugging in the AC adapter and attaching it to the belt pack completes the hardware installation.

Software installation is very straightforward, placing the G-Vox Bridge MIDI driver (which allows the G-Vox system to communicate with the PC) and a special version of Midisoft's Recording Session 4.0 sequencer on your hard drive. (The Mac version substitutes PG Music's Band-in-a-Box Lite for Recording Session.) You also get three guitar-instruction applications — Riffs, Basics, and Tour — which we'll discuss below.

Tweaking. The main settings screen consists of drop-down menus for selecting the serial port the G-Vox unit is attached to and for directing MIDI output through a soundcard or MIDI Out port. (See Figure 1.) This screen also lets you adjust the detection method, strike level, and fret-range settings, as well as the sensitivity of the G-Vox hardware. Six small holes on the top of the belt pack contain screws that adjust the intensity of the signal the guitar sends to the computer. (Here's where the included screwdriver comes in handy.)

The detection-method menu provides four choices. *Universal*, the default setting, is a good starting point for most guitarists, since it reads more of your playing subtleties than *Heavy Hand* without picking up stray finger movements and false triggers.

Heavy Hand is a very precise, albeit slower, detection method that works well with chords. The tracking is not as sensitive as the *Universal* or *Fast Light* settings, so it doesn't pick up partially fretted or lightly played notes, making it good for novices or sloppy players.

Universal 2 is basically the same as the *Universal* setting except that it also tracks velocity (i.e., the force with which you play a string) in addition to basic note-on/note-off signals. If you intend to record using a sequencer program (such as the included Midisoft one) and you want to preserve the nuances of your playing, this is a good setting to use.

Fast Light is a good setting to use for fast, single-note runs — if your fingering is clean. If your playing is even slightly sloppy, this setting will lead to all sorts of unwanted notes and false triggers.

There is also a "Pro" option that further extends the basic detection method

DESCRIPTION

Education-oriented hardware/software package that links nearly any steel-string guitar to a Mac or PC, translating notes played into MIDI data.

REQUIREMENTS

Macintosh: 25MHz 68030 processor, 5Mb RAM, 10Mb free hard drive space, 640x480-pixel 256-color display, free modem or printer port, 2X CD-ROM drive, System 7.0 or later.

PC: 33MHz processor (386 or better), 5Mb RAM, 10Mb free hard drive space, 640x480-pixel 256-color display, free COM1 or COM2 port, 2X CD-ROM drive, Windows-compatible soundcard and speakers, Windows 3.1 or 95.

FEATURES

Converts guitar playing to MIDI data. Bundled software detects notes you play (teaching fingerboard accuracy), and lets you step through a library of musical phrases note by note. Contains videos on playing technique and basic music theory. Supports alternate tunings; tuning software included. Attaching the pickup doesn't require modifying your guitar.

SUGGESTED RETAIL PRICES

G-Vox system: \$379.95. Optional software includes Basics (\$49.95), Tour (\$59.95), Blender (includes 41 additional riffs, \$49.95); Artist Libraries (\$19.95 to \$24.95); Guitar 101 (instructional multimedia CD-ROM, \$49.95).

CONTACT

Lyrrus, 400 Green St., Philadelphia, PA 19123; 215-922-0880; fax: 215-922-7230; e-mail: info@lyrrus.com; Web: www.lyrrus.com.

PROS

Works with any steel-string guitar, including acoustics. Provides an easy-to-use, self-paced means of learning guitar basics and improving playing skills. Good variety of bundled software, and the availability of additional library collections will produce continued interest for most users.

CONS

Tracking is good but not as good as a pro-level guitarist might desire for use as a MIDI input tool. Doesn't follow nuances of playing such as string bends, hammer-ons, and pull-offs without introducing a large number of false triggers. Lack of MIDI jacks makes it impossible to use without a computer.

BOTTOM LINE

Highly recommended as an educational tool both for the novice and for guitarists who wish to improve their playing. Not recommended for the serious recording or performing musician looking for a guitar-based MIDI input device.

choices by boosting the G-Vox's sensitivity and display capabilities, making it possible to track sophisticated nuances such as hammer-ons, pull-offs, string bends, and slides. When the Pro option is selected, the "Open String" option also becomes available. If you check this box, pull-offs to an open string will register on the display screen. I wouldn't recommend Pro or Open String for any but the cleanest and most experienced guitarists.

All of these custom settings can be saved and loaded from the settings screen or any of the

G-Vox software applications. This is a very handy feature if multiple users will be using the G-Vox system or for a single user with multiple guitars.

A tuner screen gives you a visual aid for tuning your guitar; each string can be set to any desired note for special tunings. These tunings can also be stored. Aside from pickup placement, nothing else will affect

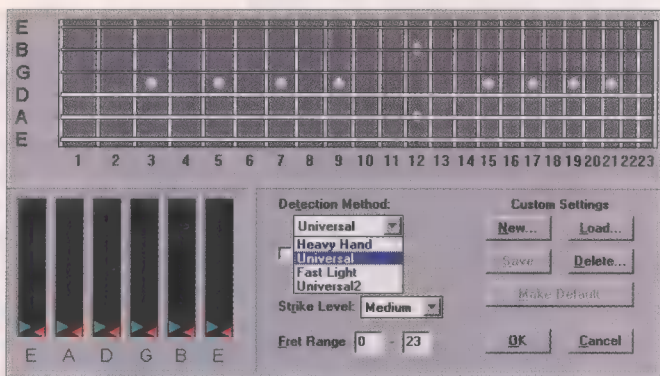


Fig. 1. On the settings screen, you can adjust the way the G-Vox interprets your playing. As each string is played, the bar-graph meter in the lower left-hand corner shows the relative level of the note. The green and red triangles are sliders that set the detection threshold: As soon as the level meter reaches the green mark, the software sends out a Note-On message. When the level falls below the red mark, a Note-Off message is sent. The Strike Level menu controls how hard you have to re-strike a vibrating string to register a new note.

the tracking of the G-Vox more than tuning. The best tracking is obtained when the guitar is precisely in tune, so a few extra minutes spent tuning will yield much better results. I also tightened down the string locks at the nut of my guitar to minimize tuning drift caused by the tremolo bar. (When playing "analog" guitar, I usually keep the locks loose and retune frequently.)

Big App Attack. The bundled software in the G-Vox package is varied and especially useful from an educational standpoint, since there is much emphasis on helping you to improve your technique and style. Lots of thought and care was put into the design to make it interesting and keep the fun level high.

The software includes Tour Venue 1, an interactive game that familiarizes you with the notes on the guitar fretboard. The game's scenario is to place you, a street musician, on a corner in front of a less-than-kind

audience. The audience hurls pieces of fruit at you with notes written on them, and you must play the correct note at the correct location on the fretboard to avoid becoming a guitar-toting fruit salad (see Figure 2 on page 48). If you miss enough notes, a 10-ton weight takes you out of the picture entirely. A lot of fun to play, Tour Venue 1 is one of the best tools for

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REVIEW Lyrrus G-Vox

teaching fretboard note locations that I've come across. The speed of the flying fruit increases as you progress in the game. The full version of Tour (sold separately) includes three additional venues beyond the street corner.

Next up is Riffs, a program that steps you through musical passages by some of today's best guitarists. The program lets you hear the riff played in real time as the tablature and notation is displayed. You can slow down the tempo to analyze the piece note by note. (See the photo on page 45.) Lyrrus has several riff libraries available and is expanding them constantly. (New riff files are posted monthly on their Web site.) If you're looking for some new riffs and runs to add to your repertoire, this is an invaluable resource.

Finally, there's Basics, a CD-ROM sampler featuring a guitar reference section and a song library. Basics is the only part of the package that requires a CD-ROM drive. The reference section covers parts of the guitar, correct posture, holding the pick, and more through five sections entitled "Starters," "Picking Hand,"



Fig. 2. Here's an incentive to learn note names: As the audience lobbs annotated pieces of fruit at you, the G-Vox scans your guitar strings to see if you played the correct notes. If you fall behind, things get messy.

"Fretting Hand," "Troubleshooting," and "Music Theory." QuickTime videos are used throughout to illustrate the material. (See Figure 3 on page 50.)

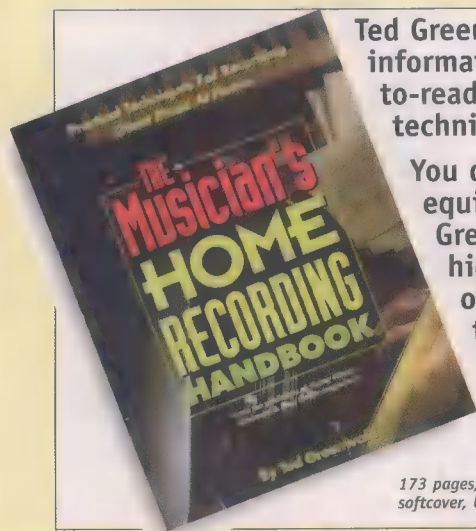
The song library section teaches the beginner how to play whole songs, starting with basic chords and progressing to melody lines, again using QuickTime videos as a visual aid. It contains "House of the Rising Sun" and "Prelude," which are accessed using the Riffs program. The full version of

Basics (sold separately) contains five riff libraries with videos. Basics is a good refresher course for anyone who hasn't played for many years as well as a good primer for the novice guitarist.

Sequencing. It's only natural that you'll want to record and play back some of your playing; you might want to try your hand at composing as well. Lyrrus has you covered. For composition and recording, the bundled version of Midisoft Recording Session works in conjunction with the G-Vox Bridge MIDI Driver. Recording Session is a MIDI sequencer program that enables you to record multiple tracks using realtime or "step" input. It supports punch-in and punch-out recording, multiple views, an easy-to-use, intuitive user interface, and other features that make it a very useful sequencer application. Recording Session even includes the ability to print your completed scores in musical notation. The G-Vox system should work just as well with any Windows or OMS 2.0-compatible sequencer. (OMS is a MIDI operating system available free from www.opcode.com.)

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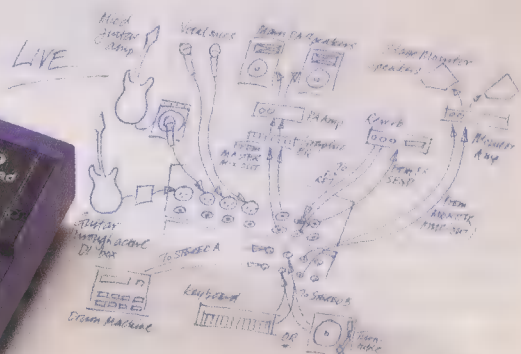
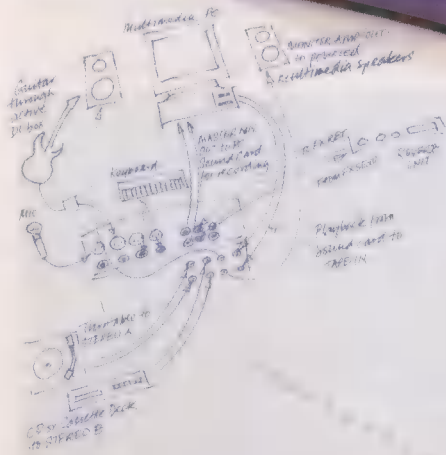
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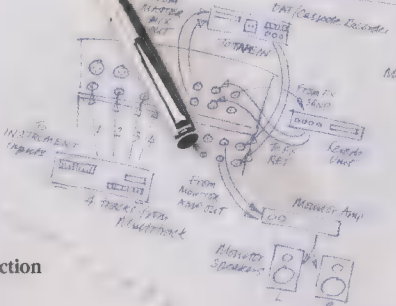


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REVIEW Lyrrus G-Vox

The 44-page G-Vox user's guide is well-organized and clearly written, with extensive coverage of how to install the G-Vox pickup on different types of guitars. The sections on setting up the G-Vox unit and troubleshooting are also quite comprehensive. The guide goes into detail on using the bundled software programs, with the exception of Recording Session/Band-in-a-Box Lite; context-sensitive on-line help is provided for them instead.

Conclusions. If you're looking for an educational tool that will help you improve your knowledge of the guitar and your playing skills, the G-Vox system is ideal. It's a teaching system that's available whenever you want to learn. It allows you to learn at a pace that's comfortable for you, and the "teacher" has infinite patience and will go over the same material as many times as you wish until you get it. This sure would have made my life easier if it was available when I first picked up a guitar!




Fig. 3. The Basics CD-ROM sampler contains QuickTime movies demonstrating playing techniques.

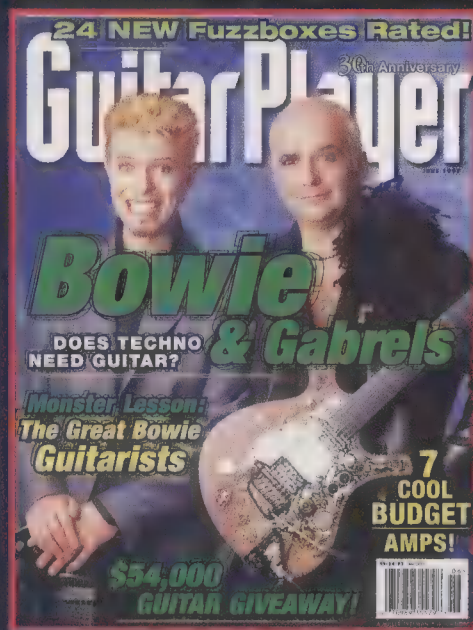
It's important to understand, however, that the G-Vox is designed and marketed primarily as an educational device for learning and improving guitar-playing skills. It's not a professional-level guitar-to-MIDI interface. If that's what you're looking for, the G-Vox probably isn't going to be the best choice. Here's why: First, the G-Vox belt pack requires an AC adapter, which gives you limited mobility. Second, you must be connected to a PC to use the G-Vox; you don't have the option of connecting the belt pack directly

to a MIDI tone generator as you do with other guitar-to-MIDI converters (e.g., Roland, Shadow, Kramer, etc.).

On the up side, G-Vox makes learning the guitar a lot of fun while providing an easy-to-use means of harnessing the power of the PC as a teaching tool. Even if you're not a novice guitarist, the G-Vox Riffs libraries are a terrific resource for analyzing and learning some of the hot licks played by guitar legends like Steve Morse and Adrian Legg. As far as

value delivered, the G-Vox packs loads of bang for the buck and lives up to its claim of being "the guitar technology that helps you play better, faster." 

Tom Benford is an author, musician, and the president of an independent testing lab serving the microcomputer industry. For information on his books and albums, or to send him e-mail, visit www.cpts-test.com/tombenford.



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Play Guitar with Ross Bolton



Guitar Instruction Software (PC)

by Craig Anderton

Let's face it: Music lessons can be a pain. You have to find a good teacher, then be disciplined enough to hit a consistent schedule of practicing and running to lessons. And there's also the fear of humiliation, as you grasp desperately at melodies that bear only the slightest resemblance to the sheet music in front of you while your teacher recoils in horror.

So there's something to be said for learning guitar at home in your spare time (sounds like a matchbook cover!). And thanks to its blend of sound, video, text, and MIDI data, the CD-ROM seems like an ideal instructional medium. Furthermore, the typical CD-ROM encourages "customized learning" by letting you browse through a variety of subjects and study at your own pace.

But is it really possible for a CD-ROM to teach how to play guitar? *Play Guitar with Ross Bolton* can take you pretty far, thanks to its seamless blending of multiple media and selectivity in choosing what information is most important to a "just-starting-out-but-still-serious" guitar player.

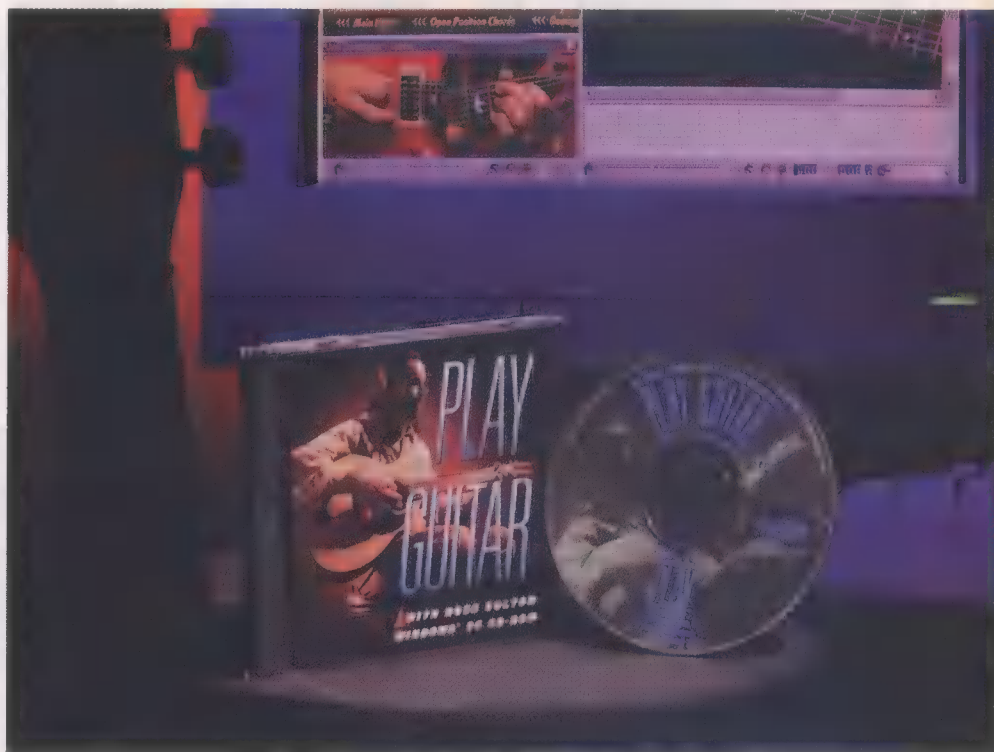
Basic Format. The course strikes a balance between a totally browsing-driven approach and a more traditional, structured method that has a defined path from lesson 1 to lesson 2, etc. Although you choose from a variety of topics, each topic is structured similarly, as are any sub-topics within the topic. Therefore, whether you'd rather learn about "open position chords" first and then "open position melodies" or go in the reverse order, it's all the same as far as the program is concerned: once you get inside the topics, they have a familiar look and feel. (You can advance linearly through topics just by clicking the "Next" button.) In addition to a contents file that lists every lesson and audio/video example, the program also keeps a history of the topics

you've covered in the current session, so you can keep track of which lessons you have and haven't taken. It would be nice if the program remembered your history after you turned off the computer; the company plans to add this capability to future products.

Play Guitar assumes you want to play rock and pop music with a flat pick — there's no material on thumb picks, or anything significant on fingerstyle or folk guitar techniques. Also, the focus is strictly musical in nature; there's no information on guitar setup, pickup adjustment, changing strings, or any other mechanical aspects of the guitar. However, if you're a beginner with a properly set-up guitar, know what a pick is, and understand what strings are all about, you're a candidate for this CD-ROM.

System requirements are fairly standard (see sidebar, page 52), but if you're tight for hard disk space, you can run *Play Guitar* directly from the CD-ROM without installing it to a hard drive. (This assumes your machine has the Indeo 4.1 CODEC software on its hard drive. You can install it by running the CODEC installation in the CD-ROM's Indeo directory.) With a slow CD-ROM drive, installing to hard disk saves time and lets the program keep track of user preferences like volume settings and the fret-board diagram view angle, but with 4X and faster drives you probably won't notice any significant difference if you just run from the CD-ROM.

Browsing the Topics. There are five major topics: About the Guitar, Open



REVIEW Play Guitar

Position Chords, Open Position Melodies, Movable Chords, and Movable Melodies. Within each topic (except for "About the Guitar") there are several sub-topics that introduce the described concepts, teach lessons using audio and video presentations, and culminate with a song suitable for playing along. In fact, every chord or scale lesson has an accompanying song for practicing your new-found skills. Four of these are well-known — Elton John's "Your Song," John Fogerty's "Proud Mary," Link Wray's "Rumble," and Duane Eddy's "Rebel Rouser" — while the others are tunes written specifically to showcase the techniques being discussed.

In addition to these five main topics, there's also a guided tour that gives an overview of the disc, and a music glossary that's handy when you need background information. It's worth taking the guided tour

— it's the only way to understand how the CD is structured — and the glossary, while limited, doesn't snicker if you ask it a really obvious question. Need to know the difference between, for example, a dominant 7th chord and a minor 7th chord? Or the definitions of terms such as triad, quarter-note, etc.? These are all explained in reasonable detail, using a combination of voice-over narration and animated fretboard.

About the Guitar. This is the logical place to start if you're fairly new to the instrument. It's amazing how just "knowing the lingo" (finger numbering, how tablature works, etc.) can unlock the secrets of not only this CD-ROM, but a lot of instructional materials (including columns in *Guitar Player* magazine, for example).

One screen shows the main terms associated with guitar (bridge, neck, nut, etc.) so you have an idea what the lessons are talking about. Another screen shows how string, frets, and fingers are numbered (necessary for reading the tablature notation); yet another screen is a chart that superimposes different notes on a guitar neck so you can see which fret plays which note. Rounding out this area, there's a section on tuning (see Figure 1), including a video lesson (which covers chromatic tuners as well as tuning forks) and a tuning reference that plays through your soundcard by repeating a note corresponding to each open string. This section does a good job of introducing the guitar, and gets you up to speed for pursuing the rest of the disc.

Open Position Chords. This section is like the other four "music-oriented" sections: It looks at the subject from several different angles (in this case, power chords, major triads, minor triads, and dominant 7th chords). Clicking on any of these brings up several lessons.

Here's where the Contents window is useful for giving you the "lay of the land." Under "Open Position Power Chords," there are three lessons — one on E5, A5, and D5 power chords (i.e., two-note chords containing just the root and the fifth), another on "Power Chords with Three Strings," and a third on "Barre Chord

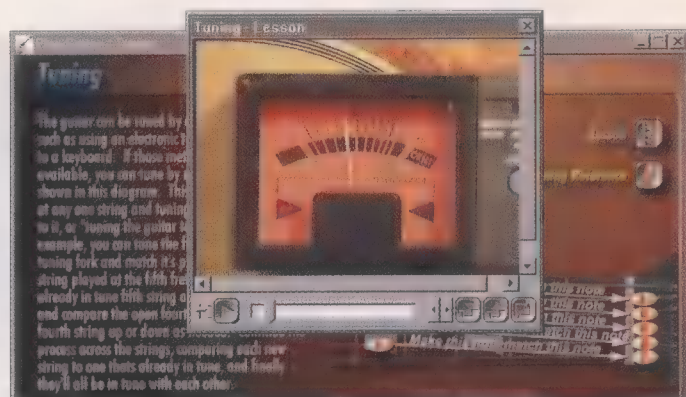


Fig. 1. The tuning lesson video has a section on using electronic tuners. It can play a tuning reference note through your MIDI soundcard, but can't "hear" your response.

Rhythm." Each has an accompanying song ("Power Chord Blues," "12-Bar Blues," and "12-Bar Rock," respectively). Small icons guide you along: A filmstrip indicates a video, a G clef the chart for the song, and a guitar headstock corresponds to the "animated fretboard" version of the tune in which the fretboard shows the fingering and notes while the tune plays through the MIDI soundcard.

Figure 2 shows the animated fretboard in more detail. The top part highlights the fretboard in one of four views (this one is "bird's eye"; there's also overhead, left-handed, and facing). The strip immediately below shows which frets are played on which strings according to standard guitar tab notation; the current note is highlighted in red. Immediately below that is a control/transport strip that lets you loop a portion of the tune (or the entire tune) for closer study, along with tempo and other controls. The bottom section is the mixer, which varies the blend of the "virtual band." This is particularly helpful with cheapo FM-based soundcards, where all instruments sound pretty much the same anyway — you can make the guitar more or less prominent than the other instruments.

Taking Lessons. The lessons themselves consist of relatively brief and to-the-point chunks of knowledge, which is good news if you have a short attention span, or can only spend a limited time at the computer. A typical example is the opening screen on the lesson for chords E5, A5, and D5 (which, some would argue, allow you to play 90% of all rock songs ever written). This screen displays the fingering of each chord; clicking on a chord diagram plays the associated chord through your soundcard. A short text blurb describes what makes up the chords, and there are hypertext links to the glossary if you don't know, for example, the meaning of something like "root" or "fifth."

DESCRIPTION

Entry-level guitar instruction software.

MINIMUM SYSTEM REQUIREMENTS

Windows 95, 486/66 processor (Pentium preferred), 3Mb hard drive space, 8Mb memory, 640 x 480 graphics, 256 colors, 2X or better CD-ROM drive, mouse, soundcard with MIDI synthesizer.

SUGGESTED RETAIL PRICE

\$59.95.

CONTACT

Play Music, 11320 Chandler Blvd., Ste. G, North Hollywood, CA 91601; 800-887-PLAY or 818-766-2958; fax: 818-766-7616; e-mail: Info@playmusic.com; Web: www.playmusic.com.

PROS

Simple without being simplistic, basic without being condescending. Excellent production values and use of the CD-ROM medium. Good value for money. Animated fretboard is excellent teaching tool.

CONS

Flat-pick and pop-music orientation only. No information about guitar setup, changing strings, etc.

BOTTOM LINE

If you haven't progressed much beyond stringing and holding a guitar, this is an excellent place to start. You get useful lessons, production values, and an engaging instructor wrapped into a learning experience you can customize.

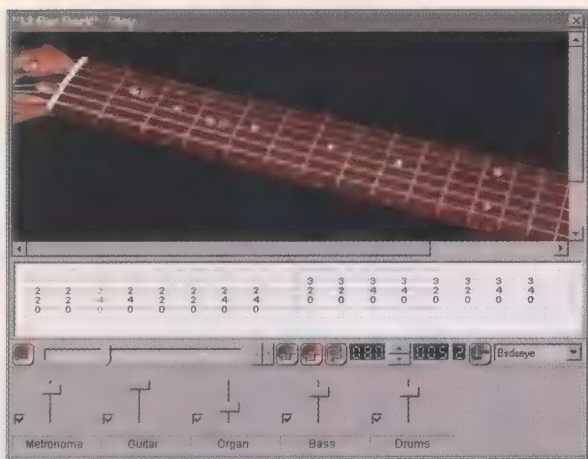


Fig. 2. The Animated Fretboard displays fingerings as your soundcard's MIDI synthesizer plays back guitar and accompaniment parts. Below the fretboard, the tablature window scrolls in sync with the music. You can also adjust the playback tempo or change the mix of the different instruments.

You can then click on "Lesson" to get more information. The lessons make particularly good use of the CD-ROM medium, as there are close-up shots of both the left and right hand, general tips on where to place your fingers, and a voice-over describing what's going on. Some lesson videos, such as the ones that demo a particular song, use split screens and other techniques (e.g., optional voice-overs or playing just the guitar part) to help get the point across. (See Figure 3.)

The payoff for the "Open Position Chords" section comes with an arrangement of "Your Song," which includes a video of a band playing the song (with or without guitar, if you want to practice *à la* "music minus one"), a lesson about playing the song, and sub-topics on the verse, chorus, and end. Each of these shows the chords used in the tune, a split-screen video indicating fingerings (with optional voice-over), and the animated fretboard version.

The net result of this level of depth is that you can really get into all aspects of playing the song, from fingering to the theory behind the music to additional "sidebar" advice on proper hand or wrist position for playing particular sections. It's also worth noting that this is where the high production values of *Play Guitar* are important. Despite massive video compression, the flow is smooth enough to see what's going on, and the sound quality is extremely good — no fuzzy videos or camcorder mic sounds here. The production values definitely enhance the overall experience.

Make Mine Melodies.

So far we've covered only the Power Chords section of

the Open Position Chords topic. The Movable Chords topic is laid out similarly, but the sections on Open Position Melodies and Movable Melodies are quite different from the Chords lessons, and are somewhat more detailed. There's a similar mix of videos, fretboard animation, lessons, and the like, all dedicated to explaining how scales create melodies. There's also a solid lesson on picking basics.

In addition to the chord and melody-related topics, there are lessons on changing keys by using a capo, and to whet your appetite for more advanced learning, a taste of more complex chords (such as those that incorporate a bass line by changing the chord root).

Finally, it's worth noting there is extensive online help should you find yourself stuck. The section on setting up MIDI playback using soundcards should be particularly helpful to those who are new to computers as well as guitars.

And the Verdict Is... I had previously checked out Play Music's other CD-ROMs aimed at more advanced players, and while they were excellent, I wondered if their approach would translate to a beginner-oriented project. The more I played with this disc, through, the more I could see a neophyte getting up to speed very quickly on some important guitar basics. One of the better attributes is that you learn music theory in parallel with playing the guitar, so the theory aspect — far from being a removed, book-learning sort of *solfège* experience — becomes much more relevant. You're not going to become a speed-reading demon with this CD-ROM, but you will be able to understand common musical terms used in communicating among band members. 🎸



Fig. 3. Split-screen video lets you get close to the action. The three colorful buttons at the bottom right set loop start and end points and activate looping mode.

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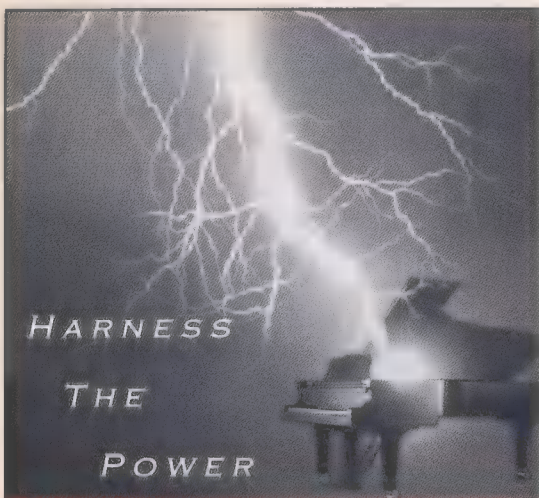
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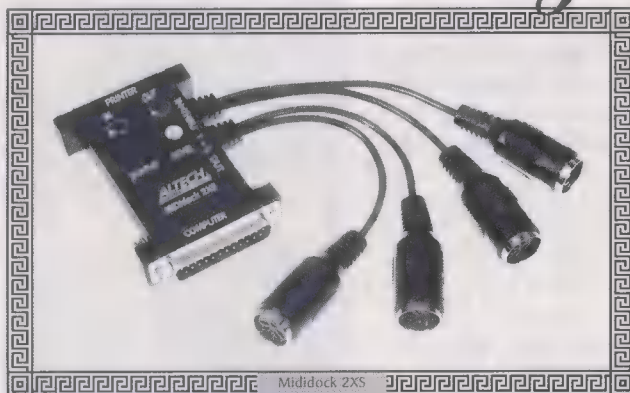
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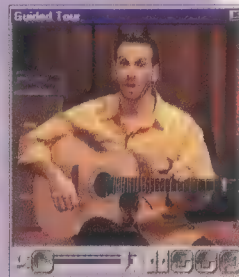
REVIEW Play Guitar

Who Is Ross Bolton?

The host of *Play Guitar* has been an instructor at Musician's Institute for nine years and is a regular contributor to *Guitar Player* magazine. He has recorded with the Beach Boys and performed with Sheena Easton, Nell Carter, and members of Tower Of Power and Earth, Wind & Fire. His studio credits include *The Larry Sanders Show* and the movies *Fridays* and *Switch*.

Play Guitar's script was written by Keith Wyatt, the director of the guitar program at Musician's Institute. He also wrote and starred in *Play Music's* other two instructional CD-ROMs, *Play Blues Guitar* and *Play Rock Guitar*. (We reviewed the former in our March/April '96 issue.) According to *Play Music*, having the same author helps the three products work as a progressive series — *Play Guitar* to *Play Blues Guitar* to *Play Rock Guitar*.

—David Battino



When I was learning guitar, I started off with a classical guitar teacher who became livid when I went off and bought a book on chords used in popular music, and ended my lessons. From that point on I learned mostly by studying a variety of books, listening to and talking with a lot of musicians, and practicing as much as possible. Had this CD-ROM been available, I think I would have made faster progress than by using my more haphazard approach. Coupling this CD-ROM with a good reference book on chords (i.e., the kind that includes diagrams of just about every known chord in the universe), and a good fake book to expand your repertoire of tunes will get you off to a good start. And at \$59.95, *Play Guitar* costs a lot less than an equivalent number of lessons from a live instructor.

Of course, nothing substitutes for working with a human teacher who can answer questions and prod, inspire, and push you to bring out musical aspects of your emotions and intellect that you didn't even know you had. But those kind of teachers are few and far between. While you're waiting to find one, check this out — and start playing.

Craig Anderton is a musician, author, and lecturer, as well as consulting editor of M&C's sister magazine *Guitar Player*.



MIDI File Power-User Tips

Ever reach into a coat pocket and find some buried treasure you'd forgotten you left? Back during our giant MIDI files issue (Nov/Dec '96) I interviewed some top Standard MIDI File composers to get insider tips on using and creating MIDI sequences. But then we amassed so much other information that we had to cut the tips article, and I tucked it away on a corner of my hard drive.

Recently, John Thomas of Sea of Glass/Glasstrax, another professional MIDI file composer, was moved to send in some tips after reading an article in *M&C*. That reminded me of the mother lode I had stashed away, so I dug it out and polished it up. Ironically, there wasn't space in this issue to include

John's tips, but rather than making you wait, we've posted them on our Web site, www.music-and-computers.com.

The contributors are Tony Lombardi of LB Music, Phil Wood of MIDI Hits, Harry Mathews of Trackbusters, Tran Whitley of Tran Tracks, Steve Kern of Trycho Music, and Anthony Garbish and Frisco Roy of Tune 1000.

How do you create expressiveness in a MIDI file?

LB Music: I try to put myself in the position of the player who's playing an instrumental part. A flute player isn't going to play three notes at once! I use

Roland Octapads [MIDI drum pads] to do the drums — with a little quantization and a little Cakewalk, you can work miracles. For guitar parts, I try to voice my chords as a guitarist, not a piano player, but it's hard. So we have one of our programmers use a MIDI guitar controller.

Trackbusters: I still find that *playing* the feel is the best way to *get* the feel. There is simply no substitute for musicianship. One handy technique is slowing down the tempo in difficult passages.

Tune 1000: All our MIDI tracks are recorded in real time and processed with a minimum of quantization. We find that using a MIDI guitar controller is extremely effective for guitar tracks. We can reproduce strumming rhythms,

Compiled by David Battino

MIDI File Power-User Tips

power chords, bends, and vibratos similar to real instruments. A tool we use quite often is the CAL macro-programming feature in Cakewalk. For example, we could insert tremolo and chorus effects or check the integrity of data in a track.

[Ed. Note: To create tremolo, a fast periodic change in volume, open your sequencer's graphic editing window and draw a repeating triangle shape on one track, assigning it to MIDI Controller 7 or 11. (This will control Volume or Expression, respectively. See Figure 1.) For a stereo effect, duplicate the track, assign it to play the same sound on another MIDI channel, pan one track fully left and the other fully right, and draw in volume data that's the polar opposite of the first track's. This will make the sound swing back and forth between the speakers. To create a chorus effect, duplicate a track, assign it to a new MIDI channel, pan it opposite the original, and then insert a small Pitch-Bend command in the second track, adjusting the amount to taste.]

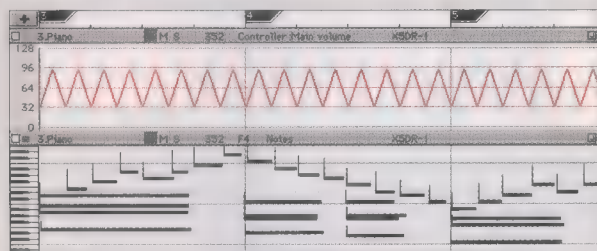


Fig. 1. In this screenshot from JS Technologies Metro (Mac) we've added tremolo to a MIDI piano track by drawing in an oscillating volume change (the red line in the upper window). The piano track is an Andy Laverne recording of "Giant Steps" downloaded from the Keyboard Web site, www.keyboardmag.com.

Trycho Music: Being able to play a multitude of "real" instruments has always been a great help in transferring the thought processes and feel of live playing into the computer domain. Also, even in the days of 4- and 8-voice sound modules, I avoided "thinning" our music to fit available polyphony. The Trycho philosophy has always been to create MIDI music that represents four to five human musicians, each utilizing ten human fingers.

Tran Tracks: Programs like Cakewalk Pro and Steinberg Cubase have humanizing "groove templates" that you can derive from your performance, so if you ever do get it right, you can copy that feel onto other performances. I find that helpful, but I don't overdo it, because I'm making tools for people to play along with. Maybe a MIDI file *shouldn't* sound human. Maybe it should be more accurate

than you're going to play yourself. If you're going to sit down and listen to a MIDI file on its own, you want it to be expressive. But if you're going to play along with it, how much do you want its tempo and start times to vary?

You can't have it both ways in one file. I come down on the side of "I'm going to make the bass and drums right." They've got to feel good on their own with nothing else playing. If I don't feel anything from the bass and drums, I don't care what you add to it, it's not going to make it.

I've found that if I make one part come in sooner than another, just by one clock tick, say, it *sounds* much more realistic. On a synth bass, for example, there's often more envelope time at the start of the sound. By advancing that track a couple of ticks, it tells the ear that it's coming in more on the beat with the bass drum.

MIDI Hits: One way to make a backing track come alive is to expand the pitch-bend range of the guitar and bass sounds, letting you simulate effects like whammy-bar dive bombs and bass slides. Most synths default to a pitch-bend range of ± 2 (two semitones in either direction). Changing this is as simple as entering three lines of controller information into your sequencer's event list window. Assign the following events on the MIDI channels playing the parts you want to affect. The events must be in this order:

Controller 101 with a value of 0
Controller 100 with a value of 0
Controller 6 with a value of X (where
X = the number of semitones)

For example, if you set X to 12, you'll change the pitch-bend range to a full octave (see Figure 2). Keep in mind that these controllers affect all sounds on the MIDI channel for which you entered this

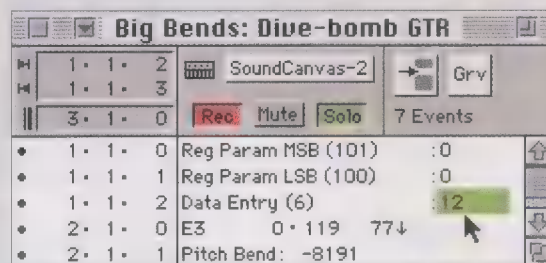


Fig. 2. The first three lines in this sequencer event-list window set the synth's pitch-bend range to an octave (12 semitones) on channel 2. A wide pitch-bend range helps you simulate guitar whammy-bar effects that can't be played with the standard two-semitone range. The screenshot is from Opcode Vision (Mac, PC).

information. Also, not all synths will respond to these commands.

At the end of your song, you should enter the three controllers again, this time setting Controller 6 to a value of 2 to return the synth to its normal bend range. Otherwise, pitch-bend information in the next song will continue bending the notes in a big way. In fact, it's a good idea to define the pitch-bend range at the beginning of every track to ensure that your files play back correctly.

How do you get new sounds from the limited General MIDI palette?

Trackbusters: In the past we have used every technique imaginable. However, we now tend to stick closely to the GM standard. This is because elaborate Sys-Ex, layering, etc. often does not transfer well (or at all) to sound modules other than the ones used in programming. Since there's such a staggering variety of sound sets out there now, our tendency is to give our customers really good sequences and let them do the tweaking.

Tune 1000: We use the same kind of mixing procedure as in an audio recording: placing every "basic" instrument (drums, bass, guitars and keyboards) in perspective through volume and pan adjustments. We then add the different accompaniment lines and solos, finishing with the melody and backing vocal tracks.

LB Music: To fatten up a fuzz guitar sound, I may double the track with a nylon-string guitar, but I always stay alert to note-robbing [running out of voices]. I was working on a kids' song today and I doubled the bass track with a tuba. It just added a little bit. A lot of times, we double the bass track: we'll use program #32, the acoustic bass sound, in track 2, and then in maybe track 11 or

12 we'll add the slap bass or something to give it that little bite and make it cut through. On one tune, we used an acoustic bass through the whole song, but right before the chorus, there's a neat bass run. You lose it with just the acoustic bass, so we copied those measures and doubled them with a slap bass. If you had it on the whole song, though, it would sound terrible.

Tran Tracks: I love to layer parts, but it consumes polyphony like crazy, and I don't know which parts the buyer is going to leave out. So I've got to get as much of it to play as I can when I send you the file. I already know that the melody line's going to go, although it gives me a creepy feeling to know that some people let that melody line play onstage and just sing over it.

How do you ensure that your MIDI file will sound good on whatever synthesizer plays it?

Trackbusters: A good rule of thumb is, if it sounds okay on a cheesy sound module or soundcard, it will sound good just about anywhere. One thing we do is what I call the "highest common denominator." For example, if you have a sequence that is in format 0 and uses 96 ppq timing resolution (the lowest common denominator), it will probably work just about anywhere. But this is very limiting if the customer has a sequencer that's capable of unlimited tracks and a 480 ppq resolution. The higher specs will support a better sequence and one that is easier to edit and work with in general. We try to find out exactly what the customer is using so they can take advantage of the maximum capabilities of their system.

Tune 1000: If the sound quality of the original song is bad, we don't hesitate to give the file an "up to date" sound — for example, putting the drums more in front, or taking the melody line back.

To test the compatibility of the file, we play it on different sound modules. We often have to compromise to get the best from each module. For example, we could drop the velocity of one track and give it a higher volume, which would make the instrument in one specific module sound bigger. The available effects in sound modules also vary from one module to another. The chorus effect (Controller 93), for example, reacts differently. To produce a compatible effect,

we create chorus using MIDI. We begin by doubling the desired track and then insert a series of pitch-bends in the form of a sine wave in the doubled track. When both tracks are played together, *voilà* — instant chorus.

Trycho Music: I'm constantly shaking up the combination of equipment, particularly sound sources. This has helped me not lock into "favorite" configurations, and I believe it gives me a better perspective on how things will sound through various combinations of equipment out in the marketplace.

LB Music: We use the Roland Sound Canvas [synthesizer] because it's the most general-sounding unit that's out there. We tell the customers, "If you want to do any further editing or mixing, you have to open tracks in measures 1 and 2 and adjust the volumes to taste."

A lot of customers call up and say, "Your sequences sound much brighter than the competition's." A secret we've been using for many years is adjusting the velocities to between about 90 and 115, so that rather than turning up the amp's volume to hear the sound,

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MIDI File Power-User Tips

you're getting the sound working its hardest to get out. We keep the velocities hot, but don't set them all to 127, because then you have no feel. The minute I see something like that, I know a guy did it on a MIDI controller that had no touch sensitivity.

Tran Tracks: It's chasing your tail to try to get a file to sound good on all GM modules. I play each file on my Sound Canvas, and I doll it up for that. Then I try it on my Korg O5R/W, and it sounds pretty much the same. I can hear that the strings aren't loud

enough, or that the horns are too loud. You really have to crank the brass sound up on a Sound Canvas to get it to have presence, like a volume of 115 out of 127. That's way too much on an O5R/W, where 90 would have been enough. So what do you do? Do you split the difference? I don't. You have to program your files for one blanket set of sounds. I import songs from Australia, New Zealand, Italy, Canada. . . . All these guys, the world over, have a Sound Canvas. That's just the way it is.

When you're making a MIDI file of a popular song, how do you deal with vocal parts?

Trackbusters: We sometimes "instrumentalize" the backup vocals by writing them out for brass, etc. Sometimes the backup vocals are so integral to the music, you *must* instrumentalize them, but more often than not, backup vocals sound a bit cheesy if you try to do them just like the record. If you really want great vocals, get a sampler or a program that combines digital audio with MIDI sequences.

We put a lead melody track on all of our newer sequences, which can be read from a notation or lyric-view window (which is now becoming popular). This track is meant primarily as a tutor and a melody driver. The melody lines need to be a little rigid so the notation portion of the program can read them with some accuracy. Most notation programs have a hard time interpreting the melody if it's too fluid.

LB Music: We have a separate melody line in track 4. I always try to use a vibraphone sound for the melody line, because it cuts through. On one song we just did, I think it was "The Star-Spangled Banner," the vibes didn't sound right because it was all horns, so we used a trumpet for the lead line.

Tran Tracks: There's never a melody sound that I like, because nothing can be as expressive as the human voice. You can't play what someone sang and have it sound good. Just for variety, I use different sounds on different songs. There's one company that always uses a sax sound. Granted, it's going to be jettisoned before you use the MIDI file onstage, but it lends such a sterile effect to the audition process. When you first turn this guy's songs on . . . there it comes!

There is an interesting thing you can do with a melody line, though, and that's to leave it in, but use it to control a harmonizer — a Digitech Vocalist, for example. Then you run your mic through the harmonizer with the effect mix set to 100% wet. It's an innovative way to pitch-correct yourself: The audience hears the pitch that's on the track. I do that on songs in which there are tough passages where I can't quite hold the note and start to go flat. I hear myself going flat in my head, then I hear the Vocalist not going flat, and I think, "Man, that's wild." ◀

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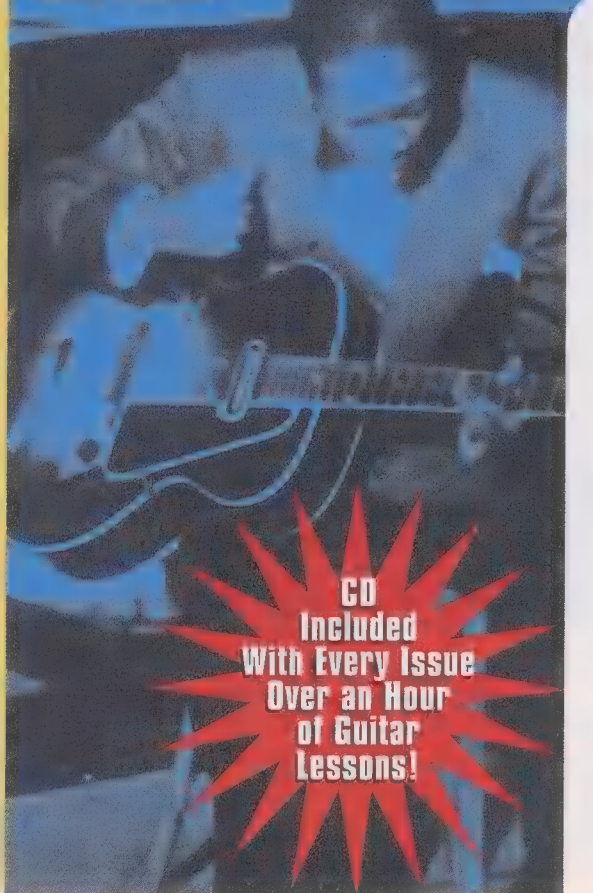
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Mysteries of MIDI

by Jim Aikin

The Peril & Promise of System-Exclusive

The folks who developed MIDI had to lock horns with a number of technical challenges. The fact that 15 years later we're still using the system they developed — not only that, but using it in more ways than ever before — is a testament that they came up with a lot of right answers. (End of flag-waving speech.) One of the big challenges was this: Everything that travels down a MIDI cable has to be encoded in eight-bit bytes, and there are only a fixed number of possible bytes available. Exactly 256 of them, to be precise. But there are a *lot* more than 256 things that musicians may need and want to do with MIDI.

For instance, we might want to use MIDI to transmit the entire contents of a synthesizer's memory to a computer. This would allow us to archive and database thousands of patches (sound programs) using an *editor-librarian* program. But when MIDI was developed in the early 1980s, it was impossible to envision what sort of data might need to be transmitted to describe a synth that wasn't yet even a gleam in the engineering team's eyes. So how do you design a communications system that's open-ended enough to allow for that future usage?

The answer lies in a type of MIDI data called *System-Exclusive*, or Sys-Ex for short.

In this issue and the next, we'll take a close look at how System-Exclusive works. There's no way around it: We're going to have to talk about bytes. While you can use Sys-Ex happily for years without worrying about the bytes in the data stream, there's really no way to explain it without getting our knuckles greasy, so button up those coveralls and let's pop the hood.

Status 1, Data 0. The basic mechanism for getting more mileage out of MIDI bytes involves dividing the available bytes into two categories: *status* bytes and *data* bytes. If you were to examine the MIDI data stream in binary arithmetic form (that is, the actual ones and zeroes that make up the byte), you'd be able to tell the difference

between the two without trouble: A status byte always starts with a 1, while a data byte always starts with a 0.

Rather than using binary, in which a standard eight-bit byte would look something like 0110 1110, it's more convenient to write bytes in a system called *hexadecimal* (base 16) arithmetic. In "hex," as it's called, the letters A through F are pressed into service as "numerals." When counting out loud in hex, you'd say, "1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, 10, 11, 12," and so on. The "10" in that series corresponds to 16 in decimal notation, while the letter A stands for decimal 10, and so on. (If you're shaky on hexadecimal arithmetic, dig out the Winter '95 issue of *Music & Computers* and turn to page 58. We discussed status bytes and data bytes in this column in the Sept/Oct '96 issue.)

Bytes convert to hex very neatly. Any of our 256 bytes can be expressed as a pair of hexadecimal numerals. For example, 0C, 37, A1, and DB are all valid

bytes. In this system, the status bytes always begin with the numerals 8 through F, while data bytes begin with the numerals 0 through 7. Because some of the numbers in hexadecimal — that "37," for instance — look exactly like standard decimal numbers, even though they're not, it's customary to follow a

Armed with the Sys-Ex information, you should be able to communicate with your equipment in a variety of subtle and complex ways.



hexadecimal number with an H: 0CH, 37H, A1H, and so on.

Usually, a status byte is followed by a strictly defined number of data bytes. For example, a Note-On status byte (such as 90H, which is the status byte for a Note-On message on channel 1) is always followed by two data bytes. The first data byte contains the *note number*, and the second contains the *key velocity* data. (Velocity expresses how hard the player hit the key.)

There are 256 bytes in all, so 128 of them are data bytes. This is why MIDI defines 128 possible note numbers, and has a velocity range from 0 to 127. The same data byte (for instance, 3EH) can represent many different things, depending on what the most recent status byte was. Whenever a MIDI device receives a status byte, it “interprets” the following data bytes in a way that depends on the meaning of the status byte.

MIDI's Back Door. That's all well and good, but most of the available status bytes have specific meanings, such as Note-On, Channel Pressure, Pitch-Bend, and so on. In order to make MIDI truly an open-ended communications protocol, its designers built in a "back door," a message type that could be used for virtually anything that might be needed, now or in the future. This message type is called System-Exclusive. Sys-Ex differs from the typical MIDI message in one very important way: The number of data bytes in a Sys-Ex message is unlimited. A given Sys-Ex message (also called a "data packet") could contain six data bytes, or six thousand, or six hundred thousand.

What's more, the meanings of the individual bytes within the Sys-Ex message *are not defined* by the MIDI Specification. Undefined bytes? Isn't that a recipe for confusion? Not really. Here's how it works:

Each Sys-Ex message starts with the "beginning-of-exclusive" status byte, which is F0. Because the receiving instrument or device doesn't necessarily know how long the

message will be, another status byte, F7, is reserved as the “end-of-exclusive” byte. The data bytes between the F0 and the F7 are the body of the System-Exclusive message.

The name "System-Exclusive" has a meaning, by the way. There are several types of System messages in MIDI. The System-Realtime messages, for instance, include the MIDI Clock byte, and also the Start, Stop, and Continue messages.

machines. We'll discuss these system messages in a future column.

System-Exclusive messages are the opposite of System-Common: They're intended to be understood *exclusively* by a few devices with which the messages themselves are compatible, while being ignored by all of the other devices in the system.

Identification, Please. This narrow targeting is accomplished with the *Sys-Ex ID*.

This ID number is always the very first data byte in the Sys-Ex packet. When a MIDI device sees the beginning of an incoming Sys-Ex message (in other words, an F0H byte) it looks at the very next byte. If it sees an ID it can understand, then it accepts the Sys-Ex message and attempts to respond to it in some appropriate way. If it sees an ID it isn't prepared to respond to, it ignores the rest of the message.

The MIDI Manufacturers Association (MMA) has assigned each manufacturer its own ID. Roland has one ID (41H), Korg has another (42H), Yamaha has another (43H), and so on. Due to the sheer number of manufacturers who are now active in the MIDI arena, the ID number 00H is a sort of breakout that indicates that the next *two* bytes are an expanded manufacturer ID. The complete ID for Microsoft, for instance, is 00H 00H 41H.

Here's the cool part: The MMA makes no attempt to dictate to any manufacturer what they can do with their Sys-Ex implementations. Once an FOH and a 42H have been transmitted, it's entirely up to Korg how to organize the remainder of the message, and what use to make

of it. The only restriction is that the message must contain only data bytes (the 128 values between 00H and 7FH).

Sys-Ex at the Source. We've already mentioned the most common use of Sys-Ex. When a manufacturer builds a new synthesizer, they include a *System-Exclusive implementation* as part of the instrument's operating system software. Using this

Continued on page 78

In order to make MIDI truly an open-ended communications protocol, its designers built in a “back door.”

untitled:01/W DrumKits

Edit Functions View

POSITION STATUS CHA NUM VAL LENGTH/INFO

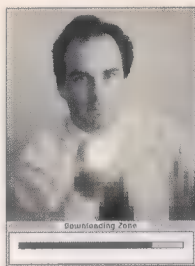
Start of List

POSITION	STATUS	CHA	NUM	VAL	LENGTH/INFO
1 1 4 227	53Ex	66	59	Korg	
43	82	0	0	1	35
5	0	0	0	0	8
1	36	5	123	95	0
0	8	1	37	5	126
97	0	0	0	1	38
5	0	99	0	0	8
39	39	2	96	94	0
0	8	39	40	3	116
0	0	0	39	41	
0	0	79	0	0	0
39	42	8	8	77	0
0	0	22	43	5	77
79	0	0	40	22	44
5	30	84	122	0	32
22	45	5	0	89	112
0	32	22	46	5	3
94	103	0	32	22	47
5	6	99	95	0	40
30	48	3	126	40	105
0	32	30	49	7	9
70	110	0	0	37	50

1/16

Fig. 1. After transmitting the drum kit data from my Korg O1/W synthesizer to Emagic Logic Audio on the PC, I opened up Logic's event list to display the data, and this is what I saw. Logic has translated the hexadecimal bytes into decimal (base-10) numbers. The data is displayed in a five-column format because that's the way Logic is laid out, but the column headers (status, cha, num, etc.) have no meaning in the Sys-Ex world. The lighter characters along the right side of the window are the ASCII equivalents of the bytes — gibberish, in this case, but if you transmit a bank of synthesizer patches to Logic, you'll probably see the names of individual patches in this column.

They're called System-Realtime because they carry timing information. The term "System-Common" refers to messages that are intended to be understood by all of the devices in a MIDI system, but in fact this is something of a misnomer, as the System-Common status bytes include Song Select and Song Position Pointer, which are designed to be understood only by sequencers and drum



Downloading Zone

by John Poultney

Mac vs. PC . . . or Java

Okay, so I was wrong. Wrong about so many things. But I can explain. I was wrong when I said in the Jan/Feb issue that after New Year's Eve, there's a long dry spell before you get any more holidays. For us Americans, anyway, it turns out that there's Martin Luther King, Jr.'s Birthday in January and then Presidents' Day in February. Where I worked last year, we didn't get MLK Day off; the place I work now is much more enlightened. Seems that companies with close ties to the financial markets usually don't get that day off, while others seem to be able to exercise discretion about it. What a country.

I was wrong, also in that issue, to list the URL for Michael Billen's wonderful SimSynth program as www.gibson.com/~dbillen/simsynth.zip. Well, I wasn't wrong at first, but the URL I listed went away, got deactivated, went kaput somehow. It's a fact of life on the Web — servers are retired, pages are moved from one provider to another. . . . The upshot is that links die. Sad, huh? Well, I'm happy to tell you that you can now find SimSynth at www.keys.de/pub/dos_win/midi/simsynth.zip and cccsat.sorostm.ro/sound_sculpture/wav/soft/simsynth.zip. (By the way, Midi Eddie, mentioned in Nov/Dec '96, is also a victim of link rot. It now resides at liquefy.isca.uiowa.edu/mac/infomac/gst/midi/midi-edie.sit, where it's mysteriously listed as *Midi Edie*.)

And — this is what pains me most of all — I was wrong to assume that most readers of this esteemed magazine would be as into the Mac as I am. A recent flurry of "Why do you people write so much about the Mac?" letters to the M&C world headquarters in San Mateo, California, has got me thinking. Both M&C and I strive to maintain a fair balance. Truth be known, there are still more music professionals working with Macs than Windows, and hence there seems to be more cool shareware on that platform, so that's probably a factor in this column. My day job as a writer for *MacWEEK* causes me and

the rest of the *MacWEEK* staff to wrestle with this issue quite often, namely, "Why are PCs more popular than Macs, when they've been technically inferior up until about a year and a half ago?"

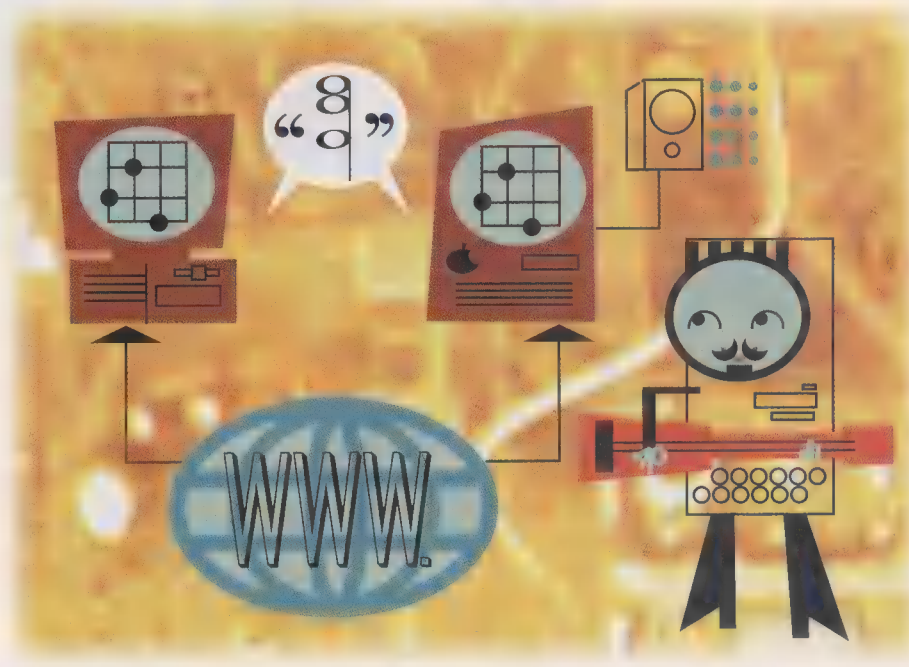
I'm not *really* taking sides here. I know there are a lot of Windows users out there, but I also know there's still more happening musically on the Mac because it has had support for sound since the very beginning, built right into the hardware. That gave it a head start on Windows boxes, which were limited to beeps until you put in a soundcard. Even then, you had to deal with IRQ conflicts and such. Only in the past year or two have these headaches begun to dissipate.

The reason I chose the Mac for my own work is that I find Windows machines difficult to use. But that doesn't mean there isn't cool stuff for Windows. And now that I've got your blood boiling. . .

Java Madness. You astute types out there may have heard of a little something called Java — a programming language

that enables true parity among the operating systems and promises to end all this pointless bickering. It's what we call a *cross-platform* language. That is, it works on PCs, Macs, Unix, what-have-you. Programs written in Java are small — so small they're called *applets* — and are particularly well-suited to the downloading lifestyle. You can download 'em right off of a Web page, and use them directly on your browser. To do this, however, you should have version 3.0 or higher of Netscape Navigator or Microsoft's Internet Explorer. You can get Java support with earlier versions, but trust me, it's a bit unwieldy as an add-on.

What can be done with Java? Well, pilgrim, saunter on over to www.unpronounceable.com/interchart/ and check out David J. Grossman's handiwork, called InterChart (see Figure 1 on page 62). InterChart is a Web site, but it's also a downloadable Java applet. What does this mean? Not only can you use it on PC or Mac, but you can use it whether



or not you're connected to the Internet. But you do have to use it with a browser.

The amiable Grossman, in a recent phone interview from his home in Evanston, Illinois, described InterChart as a free educational tool that provides a graphic display of scales, chords, and arpeggios for guitar and bass. "The applet evolved from the need to generate fingering charts for my now-abandoned six-string bass site," he said wistfully, "in combination with the desire to generate them with a minimum of manual input." Like any HTML/Java document, InterChart uses a text file as the basis for its graphic part. You can download and edit the text file to add or modify scales, chords, and . . . yes, arpeggios.

The InterChart applet/site is quite easy to use, yet very detailed. You've got your fretboard chart on the right; you've got your controls on the left. Just choose the kind of scale you want to see, and the chart updates automatically. There's support for all keys, various tunings for 6- and 7-string guitars as well as 4-, 5-, and 6-string basses, and as many as 32 frets for you Steve Vai fans out there. It also displays charts for mandolins, tenor banjos, and the perennially intimidating Chapman Stick.

InterChart gives you a choice of scale groups (Bebop, Pentatonic, Common, Exotic, Symmetric, Blues, and Ethnic), individual scales within each group, chords and modes from which to explore fingerings and voicings, and controls for voicings, arpeggios, accidentals, keys, number of frets displayed, and overlays. Overlays? Yes, you can have standard fingering diagrams, or you can overlay the dots with finger indicators, note names, or intervals.

The applet, says David, takes a theoretical approach to learning scales. "Instead of memorizing every chord, like a lot of music books say you should, InterChart teaches you to apply voicings across many different keys," he said. As an example, if you take a single voicing and apply it across five scales in 12 keys, you've essentially learned

(and understand the construction of) 60 chords, without rote memorization.

Dave's program and site are outstanding work, and I urge you to check it out. There are a couple of caveats, though: If you're running it online, you might not want to resize your window, as your browser will reload the entire applet if you do. So downloading the Java file (about 187Kb, plus a 19Kb text file) may

interval was. There's also an onscreen keyboard (with surprisingly good piano samples) that lets you try your own intervals. Very intriguing, you betcha. And it runs the same on Mac and Windows.

Chordal Knowledge. Before I talk about this next program, let me just say that, yes, it is for the Mac, but the author told me a Windows 95 version is in development. So I don't want to hear any whining, you.

In keeping with this column's educational theme, Mac users might just want to hoof on over to www.tiac.net/users/aroofls/ and get a copy of the ChordLab program, from Arthur Roolfs of Allston, Massachusetts. (See Figure 2.) This is one swingin' \$15 shareware program. It presents you with everything you need to work out the wonders of chords, whether your axe is guitar or keyboard.

On the left, you get a treble or grand staff and your choice of guitar fingering, tablature, or piano charts. On the right, you have the Circle of Fifths, and in the middle you have a pop-up menu that lets you choose from 21 root (major) chords. (Roof's gets around the usual limit of 12 by including spellings like C_b and E_{\sharp} .) Under that there are 24 buttons for variations on these chords, from the familiar (minor, minor seventh, diminished, suspended fourth) to the advanced (major sixth/ninth, dominant seventh/flat fifth, dominant seventh substituting the ninth for the root). The cool thing is that you can set ChordLab to automatically play any variation of a chord as soon as it's changed, using QuickTime's built-in sound set. [Ed. Note: These

sounds work with the QuickTime extension, but actually exist in a separate extension called QuickTime Musical Instruments. You can download both from www.quicktime.apple.com/sw/. Playback can be set to arpeggiate as well, and if your system supports speech, a little voice will tell you what you're playing. Click on a key in the Circle of Fifths and it will automatically convert the current chord to the

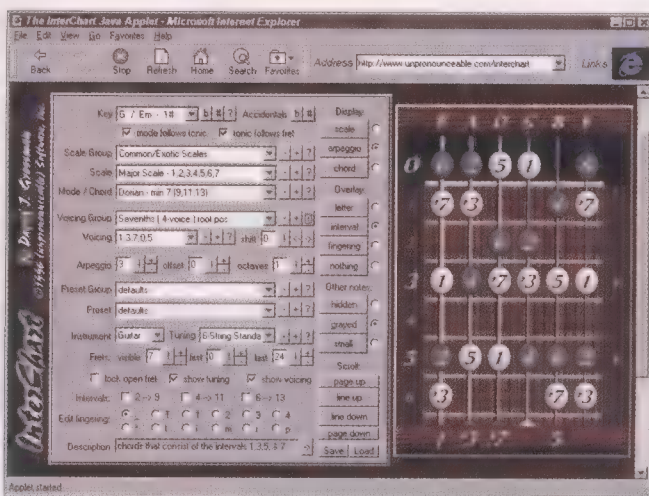
Continued on page 78 

Fig. 1. Mac? PC? Who cares? David Grossman's InterChart is a Java application that runs directly from the Internet. It displays scales and chords for guitar and bass.

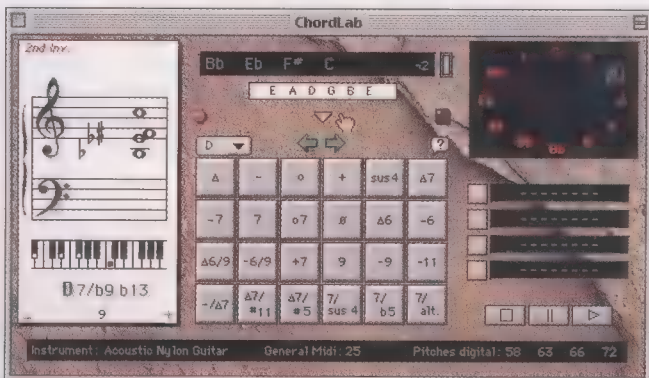


Fig. 2. You can never know too many chords. Arthur Rooft's shareware Chord-Lab displays chords in both traditional notation and guitar-fret or piano diagrams. Clicking the yellow triangle will play the chord through the computer's speaker. When you pay for the program, you get access to its ear-training and chord-recognition features.

be a better choice. The file is in PC format and is compressed with PKZip. If you want to use it on a Mac, you have to make sure your decompression program will retain long file names.

Another bitchin' Java applet can be found at www.pageplus.com/~bigears/. Known colloquially as "BigEars," this site is specialized for interval training. Click on the BigEars icon, and it plays two notes. Your assignment: Figure out what the



Computers in Education

by Ken Johnson

Internet Music Education Resources

I had a lot of fun writing this column about education sites on the Internet — too much fun, actually. Because once you start prowling around the Internet looking for great music resources, it's really hard to stop. It was all I could do to quit surfing and write the darned article. I couldn't resist downloading a Standard MIDI File here, a QuickTime movie there, or following a link to a totally different subject area and getting lost in a new universe. The Web is like that.

The URLs (Uniform Resource Locators, a.k.a. addresses) I provide here are my current favorites. Some of them came from my friends in music education. I talked to many people in the field about useful Web sites and was surprised to hear most of the same sites popping up in each conversation. Therefore, I'm confident in recommending these sites to you as worthwhile. I've organized the sites into four categories: cool points of departure, getting music, getting information, and getting video.

Cool Points of Departure. Although there can be content at these sites, the main reason to visit them is to find a link to somewhere else. First, there's Worldwide Internet Music Resources, a site provided by Indiana University's William and Gayle Cook Music Library, at www.music.indiana.edu/music_resources/outline.html. This is a good spot to search for any type of information about music. There are links to music journals and magazines, ensembles and artists (oops, there I go again — just spent ten minutes at one of several Weird Al Yankovic sites), genres (here I discovered the MIDI Jazz Network), and research on every conceivable musical subject. This is a great place to start a musical Internet journey.

Jazz lovers will want to visit Jazz Central Station at jazzcentralstation.com/jcs/map/index.html. As the name implies, this is the center of an immense amount of jazz Internet activity — there are links to jazz sites all over the world. In its

"Jazz Cafe" you can exchange ideas with other jazz aficionados, look for a gig for that gifted student of yours, or place a free ad to sell an instrument. Or perhaps you'd like to listen to an interview with a jazz great. (This requires the RealAudio software plug-in). There's also a nice search engine to go right to all occurrences of a particular jazz-related name or topic.

A few words here about plug-ins: You need them. Plug-ins are small applications that add a variety of capabilities to your Web browser. You can download and use most plug-ins for free; they'll reside in a plug-ins folder within your Web browser folder. If you go to a Web page that relies on a plug-in, you'll be alerted to that fact and given an opportunity to download the plug-in you need. In the above example, the RealAudio plug-in is the application that turns your Web browser into an audio player so that you can listen to Chick Corea talk about improvisation. RealAudio also allows you to do things like preview a CD before you buy it or listen to a radio station in Amsterdam.

Two other plug-in essentials for musicians are Crescendo (my choice for previewing Standard MIDI Files on the Web) and Shockwave (which allows you to experience multimedia projects created with Macromedia Director). [Ed. Note: See our Jan/Feb '97 cover story for more on Internet audio plug-ins and our Mar/Apr one for more on MIDI plug-ins. RealAudio is available at www.realaudio.com/. You can get Crescendo at www.liveupdate.com/ and Shockwave at www.macromedia.com/shockwave/.]

There are lots of places on the Web to find lesson plans for all subjects — except music. Compared to other subjects, there is very little sharing of music lesson plans out there. One future source may be the TIME Institute's Web page at www.TI-ME.org. (Be sure to type the hyphen. Otherwise you get a clock.) TIME stands for the Technology Institute for Music Educators. It's a non-profit corporation in the State of Pennsylvania whose mission is to promote technology



as it applies to music education. There's a healthy education resource area here as well as information on their course offerings and links to hardware and software partners.

Getting Music. Of course, for musicians, the great thing about the Web is that it's capable of delivering music! This principally comes in two forms: Standard MIDI Files (SMFs) and digital audio. [Ed. Note: See our Nov/Dec '96 cover story for more on SMFs.]

As mentioned, experiencing audio on the Web is aided by having RealAudio or a similar plug-in. To get an idea of what you can do, go to a search engine in your browser and type in "RealAudio". You'll get something like 425,000 entries back. Explore a few of them and you'll get a good idea of the audio possibilities the Web has to offer.

I enjoy shopping for CDs on the Web. At Interjuke (cdnow.com/jukebox/from=realaudio), I can use RealAudio

to listen to entire songs and albums while I browse through their huge catalog of music. Of course, you still have to wait for the CD to arrive by conventional mail, but this may soon change.

You can also use RealAudio to listen to radio stations all over the world. I use

the Yahoo! search engine at www.yahoo.com/News_and_Media/Radio/Stations/ to locate the growing number of stations broadcasting over the Internet.

For music educators, the Standard MIDI File format is a tremendous tool. With a MIDI sequencer program, we can edit SMFs in

every conceivable way to suit our instructional purposes. By being able to locate and download SMFs from the Web, we save the time we would have needed to create this music from scratch. This gives us extra time to develop our lesson plans.

You can search the Web for SMFs by title using the search engine located at www.aitech.ac.jp/~ckelly/midi/help/midi-search.html. You'll discover dozens of sites from which you can download SMFs. A word of caution here: The United States Copyright Office now views MIDI performances in the same light as other sound recordings, so

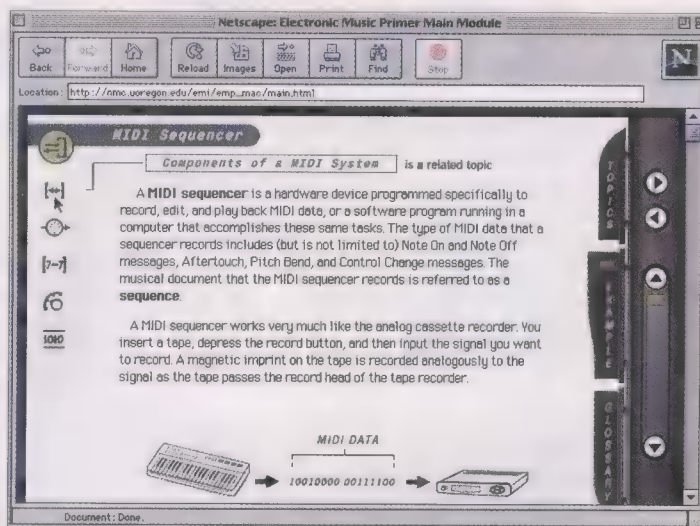
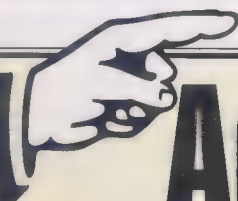


Fig. 1. Visit the University of Oregon's New Media Center Web site for an online tutorial on electronic music and acoustics. It uses Macromedia's free Shockwave plug-in to teach music technology through sound, text, and pictures.

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New! eMedia	57	129	(888) eMedia 4	New! Sion Software	71	138	(604) 222-2454
Fender Musical Instruments	9	106	(215) 922-0880	Sonic Foundry	4	144	(800) 57 SONIC
Great Fender/G-Vox Giveaway	33			Sound Chaser	71	136	(800) 549-4371
Key Electronic Enterprises	69	133	(800) 533-6434	New! Spirit by Soundcraft	49	132	(916) 888-0488
New! Korg USA	24	108	(800) 335-0800	Sweetwater Sound	27	115	(219) 432-8176
Leigh's Computers	72	141	(800) 321-6434	New! TerraTec	26	114	(714) 493-4600
Mackie Designs	C2	101	(800) 898-3211	New! The Sound Factory	69	134	(888) 598-4322
New! Maestroware Corp	35	118	(805) 254-7660	New! Voyetra Technologies/Turtle Beach	C3	143	(800) 233-9377
Manny's Mailbox Music	70	135	(800) 448-8478	Wildcat Canyon Software	43	122	(800) 336-0981
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2	20	38	56	74	92	110	128	146	164	182	200	218	236
3	21	39	57	75	93	111	129	147	165	183	201	219	237
4	22	40	58	76	94	112	130	148	166	184	202	220	238
5	23	41	59	77	95	113	131	149	167	185	203	221	239
6	24	42	60	78	96	114	132	150	168	186	204	222	240
7	25	43	61	79	97	115	133	151	169	187	205	223	241
8	26	44	62	80	98	116	134	152	170	188	206	224	242
9	27	45	63	81	99	117	135	153	171	189	207	225	243
10	28	46	64	82	100	118	136	154	172	190	208	226	244
11	29	47	65	83	101	119	137	155	173	191	209	227	245
12	30	48	66	84	102	120	138	156	174	192	210	228	246
13	31	49	67	85	103	121	139	157	175	193	211	229	247
14	32	50	68	86	104	122	140	158	176	194	212	230	248
15	33	51	69	87	105	123	141	159	177	195	213	231	249
16	34	52	70	88	106	124	142	160	178	196	214	232	250
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11	29	47	65	83	101	119	137	155	173	191	209	227	245
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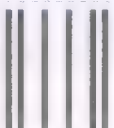
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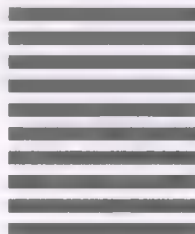
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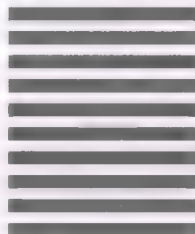
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using protected titles for public performance may have the same implications as using a recording by the artist.

No such worries when you're using the Classical MIDI Archives, since all of these works are in the public domain. There isn't a single Internet-connected music educator I know who doesn't make extensive use of this download site at www.prs.net/midi.html. All of the files are submitted by the users, so if you've created a great sequence of a classical piece, you can submit it for approval. You'll probably find at least a few versions of whatever piece you're searching for. Just use the Crescendo plug-in to preview the files and download the ones you want.

Getting Information. A great partner to the Classical MIDI Archives is the Catalogue of Classical Composers (gladstone.uoregon.edu/~jline/complst.html), where you and

your students can access thumbnail biographies on most classical composers. Terms within the biographies are linked to an extensive glossary.

A radical departure is the Electronic Music Primer at nmc.uoregon.edu/emi/emi.html, developed at the University of

Oregon's New Media Center. (See Figure 1.) This interactive walk through the basics of electronic music and acoustics was developed using the multimedia program Director, from Macromedia. As such, it requires that you have the Shockwave plug-in installed. Once that's done,

you and your students are ready to experience basic concepts through sound, text, and pictures. This site is really well done and a must-see.

Music 101 at www.music101.com is an interactive site that provides exercises and tutorials for all levels of music instruction on specific instruments. (See Figure 2.) Currently it only supports guitar, but the Los Angeles-based company behind Music 101 is developing additional tutorials on clarinet, trumpet, bass, drums, piano, and saxophone. Keep an eye on this one.

Continued on page 78



Fig. 2. The Music 101 Web site features an interactive on-screen fretboard that identifies chords and scales. It runs under Java, so it works on both Macs and PCs. Lessons for other instruments are planned.

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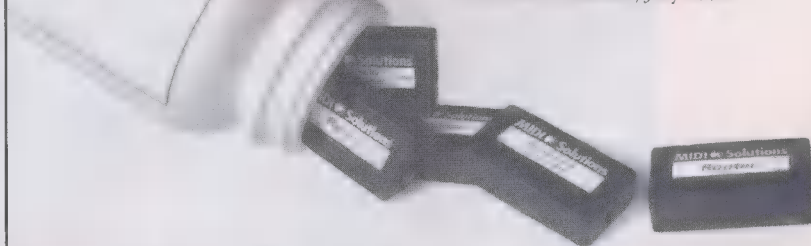
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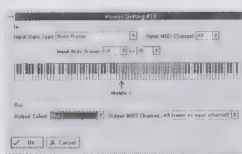
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Very MOD — A Special Six-Page Column

Are MODs dead? Or more alive than ever? A new standard called DLS 1 has changed the MOD scene forever.

It's been six months since I wrote the first MOD Philes column, and the tracked (MOD file) music scene is alive and kicking. There is so much happening that the fine folks at M&C have given me more room this time to stretch out and cover what's happening, as well as to write about your tracks.

And yet, the new Downloadable Sounds specification may toll the death knell for MOD production as we know it, at least on Intel platforms. More on that in the sidebar on page 68.

This Month's MODs. As I first started to examine "Waiting for Aliens" by **Pirate Pete**, I had some concerns. "Dangerous things lurk herein," I thought as I started up the tune and heard the dreaded "choir" patch. Could this piece hold up, or would it end up being another rehash "atmosphere" tune for the MOD Philes Bit Bucket?

The song gets going very quickly with an infectious, laid-back groove, light on its feet, spiced with a syncopated rimshot sound. I'm a sucker for this type of drum groove. Immediately I began to cut Pirate Pete (alias Jack Voltz, www.ovnet.com/~voltz/music.htm) some slack, and let the song unfold.

There are some nice things here. "Waiting" uses just a few samples, only 14 of 'em. And yet those "alien" sounds that could become very repetitive are used at just the right times so you don't get bored of hearing them. I love the way Pete syncopates the choir samples by fading them in and out with volume changes. And check out how the rimshot drum is actually composed of two sounds — a rimshot and a white noise sample (representing the reverb of the rimshot). These sounds are panned left and right, and it really gives a nice stereo effect. Accented rimshots are emphasized even more by leaving the second sound out.

After one listening, this *Aliens*-inspired piece had gotten under my skin. (Yes, it


was inspired by the movie.) I listened again, and again, and again. "Waiting for Aliens" had transcended that invisible line between the MODs that you listen to for their novelty value and music that truly entertains you. I found myself going back and spinning the track because I wanted to hear it. This is a sign of a composition that is well balanced, has original ideas, good structure, and ends at the right time.

Maybe I'm just groove-infected — maybe Pirate Pete really hasn't done that much but grab a drum groove sample and put some chords and sound effects over it. After all, I can't just gush over this piece without picking it apart somewhere, right?

The easiest way to get a background rhythm part going in a track is to obtain, or sample yourself, an entire drum part, one or two bars long. This part can often include a bass line as well. Playing back a wicked beat is as simple as triggering this one sample. I think this is the weak-hearted way out of the problem. I took a look at the drum groove in Impulse Tracker to see if Pete borrowed a loop *en masse* or put the thing together himself.

I was glad to see he hand-crafted the drum part. Well done, matey!

Pirate Pete also submitted a couple of other tunes, including "Auntie's Christmas Dinner," a fun little Christmas piece complete with clip-clopping horses, jingle bells, and some light, pleasing little melodies. If this song was part of Christmas dinner, I guess it would have to be dessert, or maybe the appetizer.

Unfortunately, this tune suffers from a fatal flaw. Some of the samples are out of tune, and this ruins the piece. It's really important to make sure that your samples are all in tune. It's simplest to tune them all to a single external source that you know to be correct, like a tuning fork, or a certain sample. 


After one listening, this *Aliens*-inspired piece had gotten under my skin.



Next Up. . . . "Radiowaves" by **Nutcase** (Sami Saarnio of Helsinki, Finland, ftp.fm.org/pub/music/nutcase) shows up a lot of the typical techno-style MODs out there. (Where, O where, do you trackers get these flattering handles?) Nutcase has a message in his music, and in his words. "The greatest thing in MODs," he says, "is that you're not limited to your synth's sounds. You can do whatever you like. Nowadays MODs seem to be more and more techno. That is a bad thing! You can track all kinds of music. I've done very different styles, from reggae to folk, piano to techno. You trackers should learn something. Stop doing only techno."

My opinion would be to stop doing so much boring techno. Good music is good music, no matter what the genre, and good techno is enjoyable.

"Radiowaves" is a very different kind of MOD indeed. It opens with some keyboard work that reminds me of the *Aja* album by Steely Dan. Complex chords are laid over a very modern dance beat. There is an elegant mix of electronic and acoustic instrument samples. The


Continued on page 72 

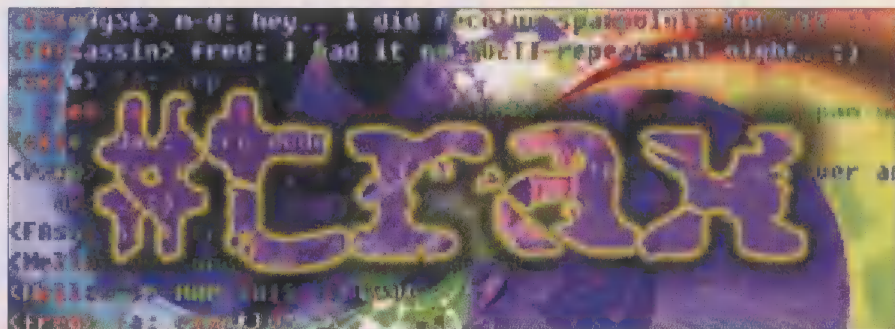
MOD Philes Online

You can reach the MOD Philes Web site by surfing to any of the following URLs:

www.howlingdog.com
www.midifarm.com
www.music-and-computers.com

There you'll find the tunes discussed in this column, tools to play and compose MODs, feedback from other readers, and lots more. To submit your original MOD tunes, just log on and follow the instructions.

If your MOD composition is selected for coverage in this column, you'll receive one of a number of fine prizes. These include Midiman's MultiMixer 6 mixer (visit them at [www.midifarm.com/midifarm](http://www.midifarm.com/midiman)), Sonic Foundry's Sound Forge XP audio editing software for Windows (see www.sfoundry.com), Synergy's ViperMAX soundcard (see www.pctoybox.com), or Schatztruhe's MODs Anthology CD-ROM of 18,000 MODs (see www.schatztruhe.de or www.ninemoons.com). 



Point your Web browser to the Trax site at spaz.com/trax/ to see who's who in the MOD scene. There's a searchable database of trackers containing bios, pictures, and information, plus lots of links to other MOD-related sites.

The Death of MODs?

The Downloadable Sounds Level 1 specification has just been unanimously ratified by the MMA (MIDI Manufacturers Association). This spec defines an industry standard for MIDI-triggerable RAM-based samples. This provides similar functionality to a MOD tracker, and if it is widely adopted, it would provide a universal, unified platform for tracked music. Could this kill off the MOD formats we now know and love? I spoke with Sonic Foundry president Monty Schmidt, who was instrumental in creating DLS Level 1.

Monty, how might DLS 1 affect MOD trackers?

It oughta just kill 'em. MODs are a musical score and a bunch of samples. DLS 1 is an MMA-ratified version of that, for the most part. You can now download samples into a device and just play your MIDI file and have it use those samples. And you can use standard MIDI tools instead of the diverse public-domain trackers, each with its own format and range of effects.

There are three portions to DLS — the synth model, the file format for the samples, and eventually an API [application programming interface] that will allow developers to put these sounds into soundcards or synth engines.

As with MOD files, there is nothing that stops DLS from being cross-platform


compatible, or even from being implemented on an external sampler. Up until now, there hasn't been a common sampler interface — a way to move a sample from one sampler to another with ease. DLS 1 specifies what can be in the file, so it's common to all products that employ it.

One of the most important things in multimedia is the common playback experience. Games were going away from MIDI toward pre-recorded digital music tracks because the results were so varied with MIDI. Now they can use DLS to download a sample for those sounds that are really important to the composition, and use GM for the more pedestrian parts of the piece, like the drum tracks or background synth pads.

Somebody who is smart out there will write a converter that will take all these MODs and convert them to DLS with MIDI, because it's going to be everywhere.

What's missing in DLS that trackers now support?

The synth module in DLS 1 doesn't include any effects: no chorus, reverb, echo, or EQ, some of which are supported in some ways by various trackers. Future levels of DLS will address these issues.

[Ed. Note: For more information, visit the MMA's Web page at home.earthlink.net/~mma/index.htm.] 

Somebody smart will write a converter that will take all these MODs and convert them to DLS with MIDI, because it's going to be everywhere.

From MOD to CD

I recently spoke with Alexander Brandon of Straylight Productions, who's writing and producing an audio CD compilation for commercial release using a computer, Impulse Tracker, and Sonic Foundry's Sound Forge. He's proving that you can do an entire album with just a few dollars worth of tools and a soundcard — no studio required.

Can you give me an overview of your project?

Musicians can combine Sound Forge 4.0 and Impulse Tracker to make professional-quality commercial music. That would've been a joke with something like MED [an older program that supported only 8-bit sample resolution and four tracks], but not anymore. Backup instruments such as drums, chords, and synths can be tweaked perfectly in Impulse Tracker, even more easily and quickly than using a synth to sequence and quantize them, and then they can be mixed with solos (guitar, voice, etc.) recorded through Sound Forge. Since Sound Forge has excellent EQ and channel separation capabilities, all the studio effects and equipment you need are right there — like [Digidesign] Pro Tools, but much cheaper.

Brandon is proving that you can do an entire album with just a few dollars worth of tools and a soundcard.

How did you settle on Impulse Tracker?

It was the first tracker we found that lets you save the entire MOD file as a single .WAV file, although it's mono. If you pay an upgrade fee, you can get the stereo .WAV writer from the author, Jeffrey Lim. It was also the first tracker we found that could do 16-bit samples greater than 64Kb in size. This meant that we could use samples that could be the equivalent of those found in very expensive synths. There are a few drawbacks: One is that you can't create stereo samples. And there aren't as many options for processing samples in real time the way you can in modern synths.

Another reason we're doing it this way is because we can do it with the tools we have. We don't have to spend the money to go out and hire a studio with real instruments. I'm learning all about working with samples and sounds, and how to mix and pan them without having to use expensive equipment.

How did you ever figure trackers out?

They're hard to get into. There was a seminar that Necros had in May '96. It was basically him, a huge screen, and a bunch of people. He emphasized

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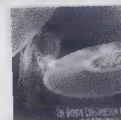
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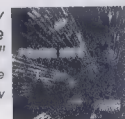
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developing the ability to get musical ideas down and into the tracker. He uses the computer keyboard to play in lines just the way you would use a normal keyboard. I know like two people who can do that.

However, since Impulse Tracker supports MIDI input, you can use a real keyboard to input lines.

How do you get your music in?

It's easiest to start with drums and pads [sustaining sounds]. Drums are a cinch to get in 'cause all the ticks are in front of you. You take your average Roland TB-303 bass drum sound, which is typical for techno, and lay it in the highlighted bars that are 16 rows apart.

What can you tweak in Impulse Tracker that you can't with standard MIDI tools?

You can identify sections of a sample and cut them and use different parts of the sample for different things. You can change the positioning of any effect like vibrato, realtime panning, delay, reverb, pitch-bend, echo, etc., without changing the sample.

You can take a drum loop, copy it to another channel with a few keystrokes, and offset its timing by one unit simply by typing 001 in the effects column. It results in a cool kind of flange or delay with the copy of the drum loop playing just after the original.

Where do you get the samples?

Most of them for the CD have to be high quality, so we get them from audio sample CDs like the *X-Static Goldmine* series

[distributed by East-West Soundwarehouse]. I sample from the CD into Sound Forge through my [Core Dynamics] Dynasonix Pro soundcard. Once I have the samples in shape, I save them as .WAV files and load them into Impulse Tracker.


What about the live parts of the tracks?

We're going to be recording live guitar and a Korg Trinity synth into Sound Forge through a Mackie mixer. We'll record each separate track into a separate .WAV file, then mix them all together once we've tweaked them, "undoing" it if it doesn't work. It's a tedious process, but one we're willing to do since the editing of each track is so powerful in terms of 3D sound, effects, EQ, etc.

Sound Forge is just amazing. But in contradiction to the other tools we're using, it is a \$500 program. If you can't get Sound Forge, you can get shareware like Cool Edit that does similar things. We could use [Digidesign] Pro Tools or [Steinberg] Cubase Audio for things like this, but since we can do all our backup editing in Impulse Tracker, Sound Forge is all we need right now. We'll most likely be going with Pro Tools for our next project; we're just seeing how well a tracker can do pro-style stuff, since, after all, it's pretty much free.

Once the tracks are mixed in Sound Forge, it's really easy to dump to a CD because they have functions for that integrated into the program.

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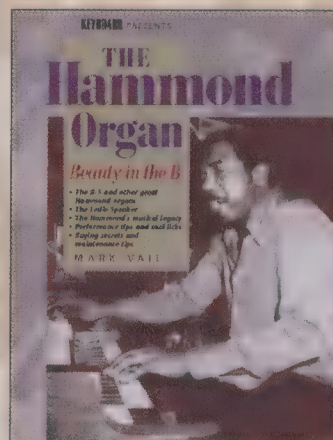
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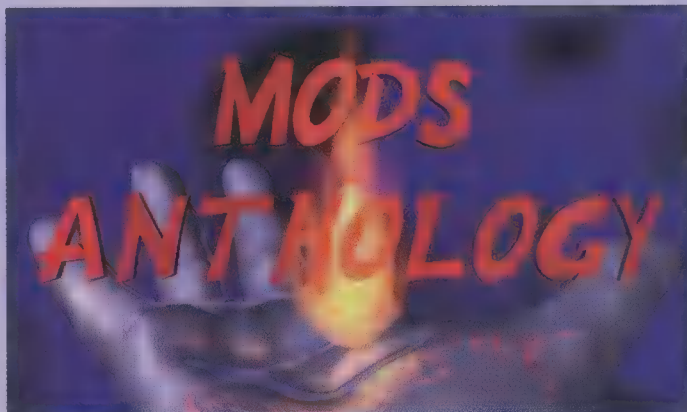
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MODs Anthology — 1,000 hours of MODs!

It's difficult to find fault with a MOD collection that is comprehensive, extensive, and inexpensive. *The MODs Anthology* is a four-CD collection of over 18,000 songs in various tracker formats. This mammoth undertaking includes over 1,000 hours of music. One thousand hours. You can buy this through Cronus for \$33.95 (see contact information below). What are you waiting for? You could spend about 8,000 hours downloading these MODs from the Net, or shell out a measly \$33.95 for what is, according to the cover, "a 7-years titanic work!"

The author of the collection is Nicolas Franck, also known as Gryzor. Nicolas clearly loves MODs. He writes, "My only leitmotiv when doing this collection was: P-A-S-S-I-O-N!" He took the time to contact as many composers as possible to get their authorization to have their work distributed.

Let's take a look at what's in the package. *MODs Anthology* comes in a double-size CD jewel case that holds the four CD-ROMs inside. Interestingly, I noticed that it is labeled "Volume 1." What could possibly be left for Volume 2? (It turns out V2 is in the works — see Gryzor's Web page at www.perso.hol.fr/~gryzor/. If you're a tracker, make sure you contact him to be included in the next anthology.)



A nice touch is that all the MODs are stored in uncompressed formats. This maximizes the ability of users on various computer platforms to access and enjoy the music, since many of the compression utilities are not supported on more than their native platforms. In fact, Gryzor has made every attempt to make the set accessible from many computer platforms. It is readable on Amiga,

DOS, Windows, OS/2, Mac, Unix, and other formats.

There are docs, tools, and lists that most everyone can use. The set tends to favor the Amiga platform, with things like Mafind interactive searches, automatic JPEG viewers (pictures of many of the composers are included), and Click_Me_First startup files that set up some lists of the better MODs on the CD and run DelTracker. However, there is a batch file in

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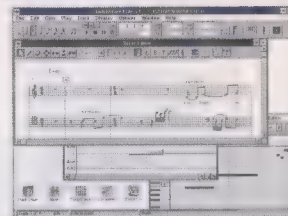


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the root directory of each CD that will run Cubic Player for DOS folks. And there are plenty of trackers, players, and tools for most platforms, which, conveniently, are replicated on each CD. Even tools for Commodore-64 and BeBox computers are included here.

The compositions are sorted into various directories which are spread across the CDs. The sorting is done primarily by author, which is nice if you want to check out a particular composer. There are also sub-directories for some groups, and a miscellaneous area. All areas of each CD are meticulously documented in files for all computer platforms, so it's quite easy to find what you're looking for. And there's a substantial README.DOC file replicated in the root of each disk with full documentation on the set, plus lots of interesting background and historical information on MODs.

Although the amount of music on this collection is staggering, I've had no difficulty in finding many compositions of high quality. Having the collection

sorted by author makes it easy to explore leading artists such as Necros or Basehead. One area of the CD that interested me was the collection of "oldies" from the early Amiga days, including songs by Karsten Obarski, who wrote Soundtracker 1.


If you want to explore MODs, this is the best collection to own. However, it isn't complete, since it doesn't include any cover tunes or remixes, to avoid copyright infringement problems. I guess "Batmeat" won't be found here. In any case, the fact that there are 18,000 original compositions included, with more coming in Volume 2, gives you a very clear picture that the scene is quite large indeed. And there are a lot more people able to figure out those weird tracker interfaces than I thought!

As Gryzor writes, "Enjoy all these MODs, freaks!"

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Continued from page 68

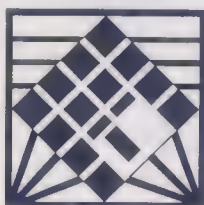
obligatory middle-of-the-piece keyboard solo is handled using a very resonant, almost nasal patch. The line is flighty and nasty, and zips around the sonic landscape without becoming too overbearing, as so many solos can.

I wish a bit more harmonic distance was traveled in "Radiowaves." The chords that sounded so beautiful at the start of the song become a bit aimless with repeated listenings. But hey, some people might call that whimsical. Still, all in all, this is a very pleasant piece. From listening alone, there is nothing to say that this is a tracked piece of music, meaning that the music is fully formed, above and beyond the technicality of the tools used to create it. The MOD format has not left its repetitive stamp on the feel of this piece, and it deserves a listen. 

Eric Bell is the Top Dog of Howling Dog Systems, makers of Power Chords and other music software. He's hoping that FM synths have the Year 2000 bug a few years early.

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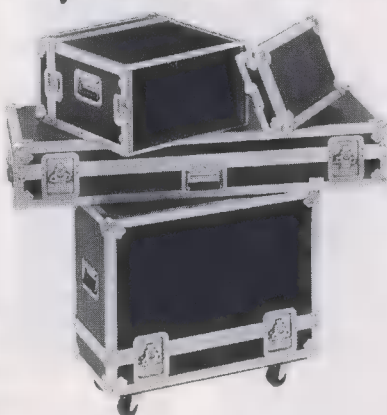
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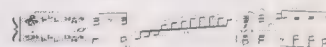
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Why Do I....

by Scott Garrigus

1)

input section to answering them, Garrigus, who wrote our Nov/Dec length. But it will also take the questions we get: "I'm on my way

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It used to be that the words "PC" and "great sound" were never uttered in the same sentence. A few meager beeps, boops, and one-note-at-a-time electronic melodies were all you could coax from an IBM-compatible machine. Today, however, PCs are capable of generating a whole symphony of sound, thanks to an onboard MIDI synthesizer and the power to record and play back high-quality digital audio. All this is made possible by one little PC circuit board called a *soundcard*.

Nearly all PCs sold today come with either a pre-installed soundcard or soundcard-like audio capabilities built into the motherboard. (Macs have always had built-in audio, although not a MIDI synth.) But even though all soundcards advertise "CD-quality sound," in reality there's a wide range of quality — as you might expect, with prices ranging from \$19 to over \$500. Whether you're looking to upgrade your present soundcard or to add musical capabilities to your currently mute computer, this column and the next will explain the basics of soundcards and tell you what you need to know to make a good decision.

What's the Sonic Scoop? Most soundcards actually comprise two different devices. One part is responsible for recording and playing audio. To record audio, a soundcard includes one or more input jacks to which you can connect microphones, CD players, electric guitars, or any other electrical sound source. For playback, output jacks let you connect headphones, speakers, or even your home stereo system.

Soundcards record by converting the analog audio signals you feed them into a digital format that can then be saved to

disk as a digital audio file (e.g., SOUND.WAV). During playback, the audio data is read from this file and converted to its original analog format. Much like tape recorders, audio programs bundled with soundcards allow you to click onscreen Record, Play, and Rewind buttons. The difference is that no tape is involved, so "rewinding" is instantaneous.

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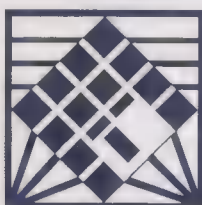
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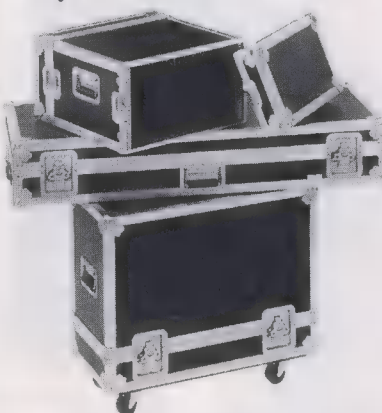
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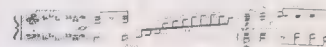
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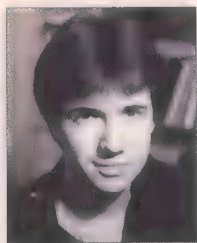
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How Do I . . .

by Scott Garrigus

How Do I Choose the Right Soundcard? (Part 1)

[Ed. Note: We receive boatloads of reader questions at M&C, and although we devote a large part of our Input section to answering them, there just isn't space to tackle them all. This new column picks up where Input leaves off. Penned by Scott Garrigus, who wrote our Nov/Dec '96 cover story on MIDI Files, "How Do I . . ." will dive into your toughest questions and address them at length. But it will also take the time to explain the basics. To start, Scott offered to speak to one of the most common — yet complex — questions we get: "I'm on my way to the store. Which soundcard should I buy?"]

It used to be that the words "PC" and "great sound" were never uttered in the same sentence. A few meager beeps, boops, and one-note-at-a-time electronic melodies were all you could coax from an IBM-compatible machine. Today, however, PCs are capable of generating a whole symphony of sound, thanks to an onboard MIDI synthesizer and the power to record and play back high-quality digital audio. All this is made possible by one little PC circuit board called a *soundcard*.

Nearly all PCs sold today come with either a pre-installed soundcard or soundcard-like audio capabilities built into the motherboard. (Macs have always had built-in audio, although not a MIDI synth.) But even though all soundcards advertise "CD-quality sound," in reality there's a wide range of quality — as you might expect, with prices ranging from \$19 to over \$500. Whether you're looking to upgrade your present soundcard or to add musical capabilities to your currently mute computer, this column and the next will explain the basics of soundcards and tell you what you need to know to make a good decision.

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output of a music keyboard to the MIDI input of a soundcard, you can play the

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soundcard's MIDI synth in real time just as you'd play a piano or organ.

The computer can also play the soundcard's synthesizer, but in an even grander way. Since soundcard synthesizers are *multitimbral* (literally, "many sounds"), they can play more than one type of sound at a time. This means that with the right software, the computer can make the synthesizer play, for example, bass, drums, piano, and sax parts all at once.

Actually, up to 16 different instruments can be made to play simultaneously. This is because MIDI supports 16 channels. Just as different instruments are assigned to different parts in an orchestral score, the same can be done with each of the 16 MIDI channels. One channel could be assigned to play cello, another channel viola, another violin, and so on.

Each MIDI channel also supports multiple voices. For

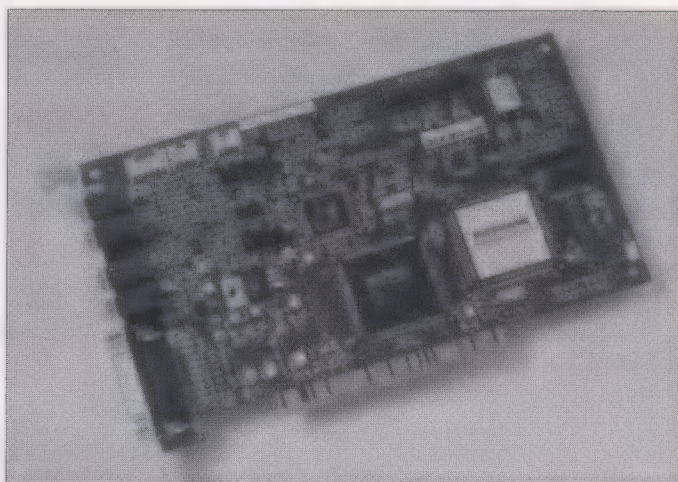
instance, even though a piano sound might be assigned to only one MIDI channel, we all know that a piano can play more than one note at a time. Each one of those notes constitutes a voice, and a synthesizer

can produce only a limited number of voices at one time. This number is called its *polyphony*. Most of today's soundcard synthesizers have a polyphony of at least 24 voices, but some have as many as 64.

Get as many voices as you can, because it lets you develop fuller musical arrangements.

Sounds Like? Early soundcards sported synthesizers based on FM (frequency modulation) synthesis. As a matter of fact, in order to stay compatible with their older cousins, most still do. Unfortunately, this method wasn't much of a step up from the built-in PC speaker. Even though FM works well with organ and bell-type sounds, it fails miserably when trying to portray most other types of instruments.

Fortunately, newer soundcards use an improved technology called *wavetable synthesis*. (If they don't have wavetable synthesis built-in, they can often be upgraded to offer it by



Diamond Multimedia's Monster Sound is one of the first soundcards to use the fast new PCI bus architecture, which we'll cover in the next column. (Note the row of electrical contacts at the bottom of the card. PCI cards use a shorter, denser socket than cards based on the older ISA architecture.) The Monster Sound also features a Wave Blaster connector — the double row of pins on the circuit board — which lets you attach a daughterboard containing additional sounds.

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attaching a small circuit board called a *daughterboard*.) Wavetable synthesis can produce very realistic sounds because it works by playing back pre-recorded real-life instruments and sounds. When the synthesizer receives a MIDI "Note-On" message, instead of creating a sound electronically from scratch (as with FM), it plays back a short digital recording called a *sample*. These samples can be anything from a single piano note to a recording of birds chirping.

The main drawback to wavetable synthesis is that the samples are typically kept small and few since they are stored in RAM or ROM memory rather than on disk. Small samples spells short sounds, so to compensate, the synthesizer has to loop the samples over and over in order to create the illusion of a longer sound. This reduces realism. With fewer samples, the manufacturer is forced to transpose each sound farther from its original pitch to cover the full range of notes, which imparts a cartoonish quality. (Professional synthesizers frequently employ a different sample every three notes, whereas cheap soundcards will stretch a sample over 30 to 60 notes.) In general, the bigger the wavetable ROM, the better-sounding the soundcard. Look for a wavetable size of at least 2Mb.

General Assembly. Who decides what types of sounds get burned into a soundcard's wavetable ROM? Nearly all soundcards today support General MIDI (GM), a set of guidelines specifying 128 instrumental sounds and sound effects (and 47 drum sounds) that all GM-compatible synths must have. GM also specifies the memory locations (or *MIDI program numbers*) of those sounds. This ensures that if a soundcard is told to play program number 37, it will always call up a slap electric bass sound rather than a soprano sax.

Unlike professional synthesizers, however, GM doesn't support any kind of sound-parameter programming. (For example, on a programmable synth, you could slow the envelope attack time to mutate a piano sample into one that sounds more like strings.) That's where the GS and XG formats come in. The Roland GS format expands on the GM standard by offering additional sounds (notably sound effects) along with sound-programming control over a few synthesis parameters. Yamaha's XG format goes even further by requiring three separate effects processors, over a dozen programmable synthesis parameters, and 540 sounds. Both Yamaha and Roland offer daughterboards that can upgrade


many soundcards to XG and GS capabilities, but there are also non-GS/XG soundcards that offer programmability.

Having a programmable synthesizer engine can greatly expand a soundcard's musical expressiveness. For the most flexibility, look for a soundcard that also supports *sample RAM*, which lets you load in your own sounds. These include the Creative Labs Sound Blaster AWE and TerraTec Audiosystem EWS 64.

What's It Good for? You may be wondering why a soundcard would include both digital audio and a MIDI synthesizer. Both have their strengths and weaknesses. The digital audio circuitry can record and play back extremely accurate sound, but digital audio takes up a lot of disk space and computer processing power. Also, the nature of recorded audio doesn't allow for easy changes in tempo or musical arrangement.

MIDI, on the other hand, is very easy for a computer to deal with. Unlike digital audio files, MIDI files don't contain actual sounds, only instructions to the synthesizer, so they're very small. They can easily be stored on a single floppy disk or transmitted over the Internet through

e-mail. The computer can use a software program called a *MIDI sequencer* to tell the synthesizer what notes to play and how to play them (many games and educational programs also rely on MIDI-based soundtracks). But since MIDI files don't contain any information about the actual sounds, this means that MIDI playback from soundcard to soundcard can vary.

To Be Continued. . . . Now that we have an understanding of what soundcards are and what they're meant to do, we're ready to discuss how to go about choosing the right one. In the next issue, we'll cover both the digital audio and MIDI synthesizer aspects of soundcards in more detail. We'll talk about what features are available and summarize what you should look for when purchasing a new soundcard. Until then, watch out for boops and beeps. 

When he's not soothing the sonic beast or answering e-mail (garrigus@pan.com), Scott Garrigus likes to play editor of his own Web-based magazine, *comp.media*, The Mac/PC Commercial Software Resource. You can find it at www.village2000.com/comp.media/.



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Mysteries of MIDI

 Continued from page 60

implementation, the synth can transmit or receive banks of patches. Usually (it's up to the manufacturer), individual patches can be sent or received as well. Even an individual parameter, such as filter cutoff frequency or LFO (vibrato) rate, can be adjusted over MIDI. The vehicle for doing this is System-Exclusive.

The manufacturer will usually publish the Sys-Ex implementation for a new instrument, either in the back of the owner's manual or as a supplementary document. Armed with the published information, you should be able (if you're clever) to communicate with your equipment in a variety of subtle and complex ways. For instance, you might be able to adjust sound parameters that can't respond to MIDI Control Changes (see Figure 1 on page 60). [Ed. Note: MIDI Control Change, or Controller, messages are generated when you move the "mod" wheel or some similar physical control on a MIDI keyboard. They are used to make many types of expressive changes in sustaining sounds, such as vibrato and filter sweeps. Jim discussed CCs at length in his Mar/Apr '96 and July/Aug columns.]

Since each synth is different, it's customary to follow the manufacturer ID with an instrument ID byte. When a Roland JV-1080 module sees the Roland manufacturer ID at the beginning of a Sys-Ex message, it thinks, "Hmm, better pay attention." But if, immediately afterward, it sees an instrument ID for the Roland D-50, it says to itself, "Nah, that's not me." It ignores the rest of the message. And a good thing, too: Since the sound edit parameters of a D-50 are organized very differently from the parameters of a JV-1080, if the JV tried to respond to the D-50 Sys-Ex message, the best you could hope for would be a sound that made no musical sense. It's even possible that the JV would crash and have to be rebooted. Again, the contents of each type of Sys-Ex message are different, and it's up to the individual manufacturer to define the meaning of the data with reference to each device in their product line.

In the next installment of Mysteries of MIDI, we'll explore some of the real-world uses of System-Exclusive, and alert you to some potholes that you may need to steer around. 

.....

Jim Aikin is the senior editor of M&C's sister magazine, Keyboard. He would rather use Sys-Ex, or even write about it, than visit the dentist.

Downloading Zone

 Continued from page 62


new key, retaining all voicings, variations, and/or inversions.

I found ChordLab to be a sensation, and even set my PowerBook next to my MIDI keyboard to try out a few chords. You can experiment with voicings by clicking the inversion buttons or dropping the inner notes by an octave. I found it immensely cool when it was set in "autoplay" mode. Every time I changed a chord it played immediately. There's also an ear-training mode (which is only activated once you register the program) that will test your knowledge of chords and intervals. A "Chord Calculator" feature, also activated through registration, tells you if that clump of notes you're thinking of actually is a chord, and if so, which one. Shazam!

ChordLab also displays the names of the notes in each chord, the QuickTime instrument selected for playback, and the MIDI numbers of each note. The current version doesn't work with external MIDI devices, but Mr. Roolfs tells me that capability is on the way.

He also tells me he envisioned ChordLab as a desk accessory, and deliberately kept the program's window small so it could co-exist with another music app. It's certainly a convenient size, and easy to use. But honestly, without Balloon Help running, I would've been at a loss to figure it out. A few things are hard to understand at first, such as the quizzical "Stuff" menu. All in all, though, you can't go wrong with this one.


If you don't "do" Internet, you can also order ChordLab through snail mail from 348 N. Harvard St., Allston, MA 02134. Arthur requests you add an additional \$5 to the shareware fee to cover shipping costs.

All right, people. I'll see you next time. And unless we're talking chords, don't go changing. 

.....

John Poultnery, often found hanging around hotel Lost & Found departments asking, "Are you sure you don't have a pair of blue sunglasses?" is not the same John Poultnery mentioned on page 378 of The Book of Lists 2, the guy with four personalities who was found wandering the streets of L.A. in 1929. This one, when he's not combing public beaches with a metal detector, is an itinerant bassist with the Human Torches (www.actionpacked.com), and a staff writer at MacWEEK in San Francisco.

Computers in Education


 Continued from page 65

Getting Video? That's right. The best MIDI sequencer/digital audio programs on the market are becoming more multimedia in nature, giving you and your students the ability to open and synchronize digital video from within the music application. As such, it's a tremendous opportunity for music teachers to address sound-for-picture instruction with no need for expensive specialized equipment. And your students will absolutely love it.

My favorite computer video format is QuickTime, since it runs on both Mac and PC. Start by taking a trip to Apple's QuickTime Movie site at www.quicktime.apple.com/sam/#mov. For instructional purposes, look for material that is on the long side, say over 1.5Mb or so. Be aware of copyright issues if you're planning to offer the resulting projects for public consumption. Two other sites with an extensive selection of free QuickTime movies are Video Links at members.aol.com/videolinks/index.html and The QuickTime Archive at film.softcenter.se/flics/. We'll get more into the specifics of teaching music-for-picture applications (at all levels!) in my next column.


Shortcut

Since we know you'd rather spend your time visiting the Web sites mentioned here than typing in their addresses, we've posted all these links on the "Music Links" page of the Music & Computers Web site, www.music-and-computers.com/Links.htm. —Editor

That about does it. If you visit these sites, I hope the experience is as joyful for you as it has been for me. Somewhere in the middle of investigating the hundreds of sites I visited preparing for this column, I really began to see the Web as more than a tangle of wires, slashes, and search engines — I saw it for the powerful tool it is. Imagine: I can download a Standard MIDI File and pick a QuickTime movie to go with it for a class presentation, print out biographical info on the composer for a handout, and order a CD of her latest work for next-day delivery just for my own enrichment. Wow, I'm inspired! 

.....

Ken Johnson has been a music educator for 15 years. He's currently the educational sales manager for Opcode Systems. Please send your ideas on computer-enhanced music education to him at kerj@opcode.com or call 847-540-7372. He'll share the best ideas in upcoming columns.

 Continued from page 80

kind of exciting possibilities will be happening on the Net? One of the most important things brought up at Project Bar-B-Q was only said once. Top game producer Brian Moriarty made a very strong and impassioned plea to pay attention to two-way voice communication over the Web. As that becomes commonplace, the Internet will do a giant shift in how important it is in our lives.

Right now the Web is a very lonely place. Although there are millions of people online, the only contact you have is an occasional view of a counter that tells you how many opportunities for contact you have *missed*. When that changes, you'll be in an unbelievably busy, socially rich area, one that will change our view of how important we are as individuals. It will change our view of our context in society. It will probably be one of the most important shifts we go through in our lifetime.

That change is beginning with the advent of full-duplex (bidirectional) voice transmission. As that becomes full-duplex *music*, communication on the Web will not only be unlimited by time and place, but also unlimited by the constraints of the intellect, the way a good jam session is.

How might full-duplex music work? Suppose you could call up your friend down the street — or in Hong Kong — and set up an online jam session. You might plug your guitar amp into your computer and put on a pair of headphones. And he might put on his pair of headphones and put a couple of mics around his drumset. And after you jam for five minutes, rather than saying, "Hey, let's go get my little brother Stinky to play bass with us," you might go to the Web and shop for a bass player. Click on one at random or one that's been sorted in someone else's links. If he's available for a jam, he might just sit in with you.

Information sorting will be very interesting: There will be jam organizers. There will be people putting together their own supergroups. When you go worldwide, there's an incredibly rich pool of very good musicians. You might come home, turn on your computer, and see that the little light is flashing for "drummer wanted."

You could get on the Web and say, "I don't sing, but I'd like to try it." Or you could click on all the jams that are happening all around the world and just listen. Can you imagine the richness of music that would be available if you could tune into

any one of 200,000 jam sessions? You might even be able to sort them by area, so you could go over to someone's house to "meet the meat."

Or . . . you could go down the street to Geno's Italian Bar & Grill and sit in on a blues jam today. Maybe you should. *To get a taste of what the incredible future will be like in your living room, get into a car and go down to the neighborhood jam session!* But in the future, there will be a zillion people available to play a zillion different styles of music in a zillion different combinations. I guess that would be a zillion factorial. . . . Whatever; it will be enough that if they were hot dogs, they would line up end to end and reach from here to Mars and back.

Everyone's a Producer. The future of game music is a little bit different because someone has to make a decision as to what's appropriate music for their game. They might decide to have a

Interactive music is to linear music as sculpture is to painting.

custom environment created for them instead of a tune.


Currently, when I write a piece, I'm a composer. And when you listen to a piece, you're a listener. I have written, and many of my friends have written, programs that allow an intermediate step. So we become composers of an environment. The user interacts with that environment, and music comes out differently depending on how he interacts with it. The user becomes more of a conductor than a listener. There really isn't currently a word for it — he's somewhere between a producer and a kibitzer. He has as much effect on the music as a vandal in a museum who wants to cut up the paintings and arrange them in different ways.

You've got to create your paintings in such a way that they are effective no matter how he cuts them up. Essentially this is what good interactive composers do now. This is what Mark Miller does. This is what the folks at LucasArts do. Listeners don't realize that *they're* composing, that

as they play the game, and as they do better or worse, the music changes in ways that the environment creators have anticipated and accounted for.

I had a *great* argument with Team Fat's Joe McDermott in which he said, "I don't want anyone messing with my music." Joe's a painter, so I said, "Look: What if I told you I could create a kind of painting that, depending on what the viewer did, would look all kinds of different ways? You could still be in control of how that appears to them, yet they're in control of which aspect they see. It would be infinitely variable, but they'd be the ones who would cause the variation. Would you be sold on it?"

He said, "I don't know." I said, "Well, think of interactive music as sculpture. Interactive music is to linear music as sculpture is to painting. The user can stand any place in the room and get a different experience, and it's always aesthetically pleasing. And that's the responsibility of the sculptor." You don't want to lose control of that, because as the author of the music, you have an emotional intention. You want, in most cases, to expose the player to certain emotions at certain points in the game.

Music is a form of communication, just like talking. And the point of talking and music is to give each of the people who is communicating a clearer view of the entity that is behind that noise. If there is no entity behind that noise, you have a clear view of . . . nothing. Art is very important in this day and age. It is possibly the only way that each of us can be reminded of his relationship to the universe. Speech is too specific to be able to do it. Music and poetry allow *symbolic* communication of how we see the universe in a way that might ring true between two individuals and remind us that the world is not a verbal world. You can't do that if a *computer* is telling you what it sees, because the computer is not included in that community of people who need to communicate with each other. 

.....

The Fat Man, George Alistair Sanger, is internationally known as the biggest name in music for interactive entertainment. Together with Team Fat, his gang of cowboy composers, he has contributed the musical scores for over 100 software products. For more Fat thoughts and music, point your Web browser to <http://fatman.outher.net>.



Ride the Wired Surf

with the Fat Man

Hose!

This was to be the column in which I finally revealed the details of the cutting-edge musical computer that was designed at Project Bar-B-Q, Team Fat's brainstorming summit for the computer audio industry. But a lot of people are taking those ideas seriously enough to want to release the specs in a formal way, and they'd prefer we not confuse the world by publishing figures before they were absolutely precise. So instead, I thought I'd talk in a more general way about one of the intriguing conclusions of the summit, the musical benefits of high-bandwidth Internet connections. Or, as we yelled at the time, "Hose!"

What would a truly high-speed Internet connection bring to computer music? Music is pretty much unlimited if you're making a CD-ROM game. But the world is going toward downloadable games. Currently, it's not practical to use digital audio soundtracks in downloadable games, because digital audio requires much more space than MIDI does. And yet, it's so close to being practical that it's very frustrating. In order to make it sound sort of like sort-of-good music, you have to be 200 times more clever technologically than you'd have to be to just slap the music onto a CD.

So in most people's eyes, the challenge is, "How can I cleverly emulate great-sounding music using the limited resources?" I'm more inclined to make my challenge, "When do I decide *not* to head down the road of cleverness and just spend my attention and energy on issues such as putting some decent warm sounds in a sensible order?" Melody, harmony, counterpoint, and a beat the kids can dance to, in other words.

Whenever a client gives me a choice of digital audio over MIDI, I jump up and yell, "Yes!" even before they tell me what sample rate or bit resolution will be available. Team Fat has a policy that we will take even 8-bit/11kHz digital audio over MIDI. The benefits of MIDI include easier interac-

tivity and small file size, but we're more interested in singing than in interactivity. Ha! I'm shooting myself in the foot with this, but I'll say it anyway because I love you readers and I'm writing this on Valentine's Day: My daughter Sandy, three years old, was asking if she could play one of our games that features digital recordings of Berenstain Bears songs. Instead, I showed her how she could play it on the regular CD player, because that way, she "wouldn't have to sit there and click."

Non-interactive music is good, because you don't have to sit there and click! I heard the words come out of my mouth and I saw my income dropping by two figures, if that were possible, down into the tens. But I had to say it anyway.

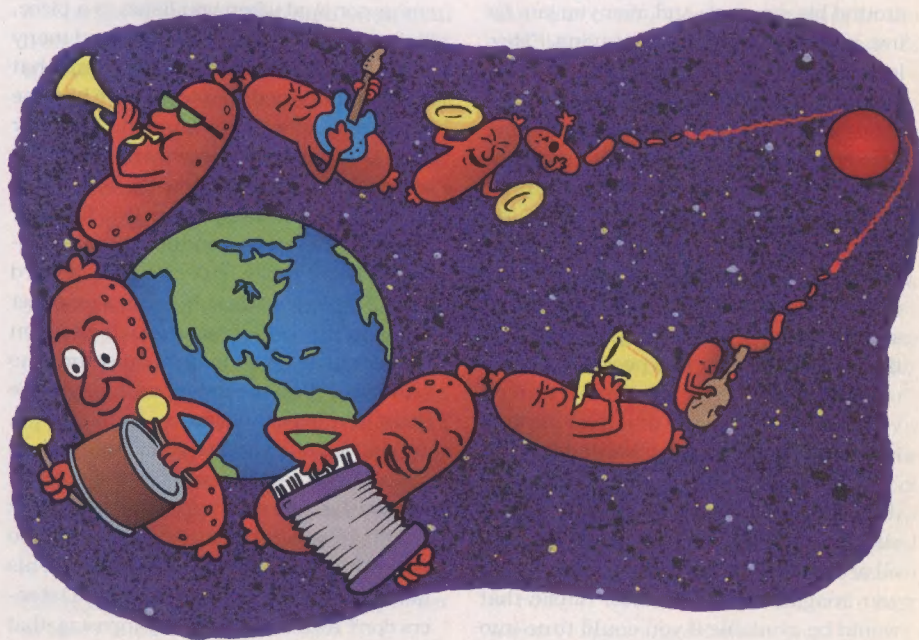
Everyone knows there are many cases where good music with singing and tambourines and hand claps has a magical effect and doesn't need to be interrupted by mouse-clicking just because you can. On the Web today, you have to make a decision as to how important interactivity is to you, how important fidelity is to you, and how important time spent composing is to you. You frequently have to decide not to be overly clever in your efforts to overcome

technology that's going to be awkward for the next six months. Instead, put that energy into composing, overcoming the challenges of composition rather than the challenges of technique and technology. They're both valid, but if you always opt to conquer the technical challenge, you'll leave your composing muscle badly atrophied. This may not be the time to do that, especially when you consider that in a few months, the skills you will have developed will be useless.

Enter the Hose. When those technical limitations are no longer issues, what

Continued on page 79 ➡

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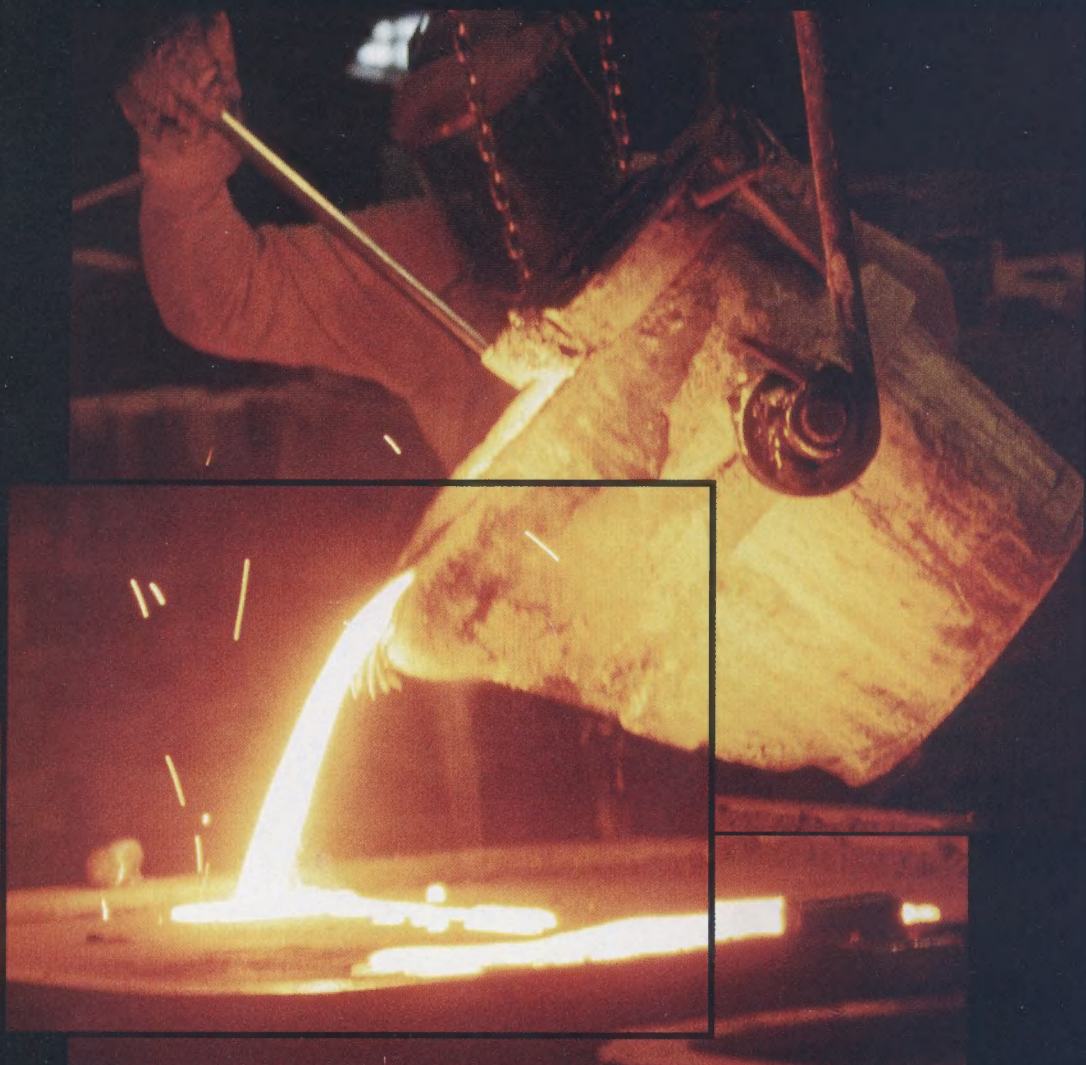
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Sound Forge Heats Up With ActiveMovie



Sound Forge 4.0, the award-winning digital sound editor for Windows, now supports ActiveMovie audio plug-ins. Sonic Foundry has selected ActiveMovie (a component of Microsoft's Interactive Media technology) as the foundation for the Sound Forge plug-in architecture. ActiveMovie plug-ins will be supported by a variety of audio software companies including Sonic Foundry and Waves.

Sound Forge also supports the ActiveX Streaming Format (ASF) – the new audio and video Internet and intranet streaming standard used by Microsoft's NetShow On-Demand.

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